pennsylvania
STATE EMPLOYEES' RETIREMENT SYSTEM

2020

Annual Comprehensive Financial Report

With Independent Auditors' Report for Fiscal Years Ended December 31, 2020 and 2019

Commonwealth of Pennsylvania
State Employees' Retirement System

A Component Unit of the
Commonwealth of Pennsylvania

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Commonwealth of Pennsylvania
State Employees' Retirement System

Prepared by the staff of the
Pennsylvania State Employees' Retirement System

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A Component Unit of the
Commonwealth of Pennsylvania

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GFOA Award Certificate

Government Finance Officers Association

Certificate of Achievement for Excellence in Financial Reporting

Presented to

Commonwealth of Pennsylvania
State Employees' Retirement System

For its Comprehensive Annual
Financial Report
For the Fiscal Year Ended

December 31, 2019

Executive Director/CEO

Public Pension Coordinating Council

Public Pension Standards Award For Funding and Administration 2020

Presented to

Pennsylvania State Employees' Retirement System

In recognition of meeting professional standards for
plan funding and administration as
set forth in the Public Pension Standards.

Presented by the Public Pension Coordinating Council, a confederation of

National Association of State Retirement Administrators (NASRA)
National Conference on Public Employee Retirement Systems (NCPERS)
National Council on Teacher Retirement (NCTR)

Alan H. Winkle
Program Administrator

pennsylvania
STATE EMPLOYEES' RETIREMENT SYSTEM

June 10, 2021

Mr. David R. Fillman
Chairman, State Employees' Retirement Board
Commonwealth of Pennsylvania
30 North Third Street, Suite 150
Harrisburg, PA 17101

Dear Chairman Fillman,

The Pennsylvania State Employees' Retirement System (SERS) is pleased to present you with the 2020 calendar year Annual Comprehensive Financial Report (ACFR). The purpose of this report is to provide the Governor, legislature, system members, participants, and annuitants, as well as the public with a clear accounting of SERS' operations and financial position. We hope you will find this financial, investment, actuarial, and statistical material produced by SERS management to be both interesting and useful.

SERS remains committed to delivering accurate, meaningful information to policymakers and SERS members, as well as to provide context for our independently audited financial statements.

SERS administers four retirement plans for state employees – three plans require mandatory employee and employer contributions and one plan allows only voluntary employee contributions:

- **Hybrid Plan** – is a combination of two Internal Revenue Code-defined plans – a traditional pension or Internal Revenue Code (IRC) section 401(a) defined benefit plan with an IRC section 401(a) defined contribution investment plan. This plan requires mandatory contributions from both the employee and the employer. There are two classes of service within the Hybrid Plan, class A-5 and class A-6.

- **Defined Contribution Plan** – is an IRC section 401(a) investment plan. This plan requires mandatory contributions from both the employee and the employer.

- **Defined Benefit Plan** – is a traditional pension plan defined by IRC section 401(a). This plan requires mandatory contributions from both the employee and the employer.

- **Deferred Compensation Plan** – is a voluntary supplemental plan defined by IRC section 457(b). This plan allows only voluntary employee contributions. (Note: The Deferred Compensation Plan has its own stand-alone financial statements and is not included in the ACFR).

Most new state employees are automatically enrolled in the Hybrid Plan A-5 class of service, with the right to opt out of that class of service into the Hybrid Plan A-6 class of service or the defined contribution-only plan. The exceptions are hazardous-duty employees and those who contributed to the traditional defined benefit pension plan in the past. In those two cases, the employee is automatically enrolled in the traditional defined benefit pension plan.

For 2020, KPMG LLP has conducted an independent audit of SERS financial statements, which are prepared in accordance with U.S. generally accepted accounting principles. Because the cost of a control should not exceed the benefits to be derived, the objective is to provide reasonable, rather than absolute, assurance that SERS financial statements are free of any material misstatements and fairly presented. As is our standard practice, independent auditors have full and unrestricted access to you and the board to discuss their findings regarding the adequacy of SERS internal controls and the integrity of SERS financial reporting.

SERS again received an unmodified opinion in 2020.

The Defined Contribution Plan opened for enrollment on January 1, 2019. As of December 31, 2020, there were over 13,000 accounts established and the plan had a net position of approximately $40.5 million. The plan receives participant and employer contributions and the participant can choose to invest their money in several investment options, with most plan participants investing in the default option of a target date fund. During 2020, there were important legislative changes made to improve the funding stability of this plan. These include establishing the ability for SERS to assess a per-participant charge to all employers to cover the fees, costs, and expenses associated with the plan, as well as allowing for SERS to utilize unvested employer contributions towards paying the administrative costs of the plan. More information regarding the Defined Contribution Plan can be found in the Management's Discussion and Analysis within the Financial Section, while the remainder of the financial information in this letter is for the Defined Benefit Plan only.

Members and the SERS Board can be assured that their retirement system is administered well, and that staff carefully manages the funds entrusted to the board. As of December 31, 2020, the SERS' Defined Benefit Plan had a net position of approximately $35.0 billion after paying out approximately $3.6 billion in retirement benefits to more than 133,000 retirees and beneficiaries; $3.2 billion was paid to people living in Pennsylvania, stimulating local economies.

In 2020, SERS served 102 agencies/employers and approximately 240,000 total members.

In mature pension plans such as SERS, newly retired members entering the pension rolls tend to have higher benefits than those who die and are removed from rolls. SERS' experience reflects that trend. In 2020, approximately 5,300 SERS members retired with an average annual benefit of about $30,100, while approximately 4,700 retirees with an average annual benefit of about $16,700 were removed from the rolls.

The past year, 2020, brought an array of challenges, primarily resulting from the COVID-19 pandemic. Initially, the financial markets experienced extreme volatility, but eventually recovered. Thanks in part to our investment strategy and the asset allocation adopted in December 2019, SERS finished 2020 on a positive note.

During 2020, SERS experienced investment gains of approximately 11.1% for our Defined Benefit Plan – several points above the fund's assumed rate of return, contributing approximately $3.9 billion to net investment income. Thanks to these positive returns, five years of full funding from the General Assembly, the receipt of $1.06 billion from Penn State's prepayment of its unfunded liabilities (made possible by Act 2019-105), and our ongoing efforts to implement efficiencies across SERS, we continue to progress toward our long-term goal of eliminating our unfunded liability.

Now that SERS employers are paying the full "uncollared" contribution amount, plus making extra "plowback" contributions to return Act 2017-5 savings, there has been a positive impact on paying down the unfunded liability. This funding is crucial for the overall long-term health of the pension system.

Based on the GASB 67 accounting valuation as of December 31, 2020, the resulting net pension liability was $17.2 billion. SERS plan fiduciary net position as a percentage of the total pension liability was 67.0%. Based on the actuarial methods used for funding purposes, as of December 31, 2020, the unfunded actuarial accrued liability was $22.4 billion. SERS funded ratio was 59.4%.

The impact of continued positive investment results in 2020 on fiscal year (FY) 2021-22 employer contributions was mitigated somewhat by the net impact of the SERS Board approving various economic and demographic actuarial assumption changes as part of the *19th Investigation of Actuarial Experience*. One of those changes was to reduce the assumed rate of return from 7.125% to 7.0%. In FY 2021-22, the composite employer contribution rate will be 33.81% of payroll. These contributions are estimated to generate approximately $2.2 billion for the fund.

While future contribution rates depend on future returns and experience, current projections indicate SERS' funded ratio will reach the 80% threshold generally accepted by pension experts as "healthy" by 2030. Pennsylvania is among nearly two-thirds of public pension plans currently below the 80% funding threshold.

The annual cost of the plan continues to drop as the number of members in the newer classes of service, including the A-3 and A-4 classes and the new A-5, A-6, and defined contribution classes that opened January 1, 2019, increases.

SERS continues major initiatives to improve services to our stakeholders, as well as improving efficiencies in the delivery of benefits and reducing costs in the administration of the system.

SERS' investment activities are focused on accomplishing our central mission – providing benefit payments to members and participants at the lowest cost to the commonwealth and to fund the program through a carefully planned and executed investment program. These investment activities are guided by a formal *Statement of Investment Policy* that was first adopted in 1979 and periodically revised and updated to reflect and incorporate legislative changes governing investments and amendments to policies guiding investments. The governing policy in place for 2020 was adopted December 4, 2019, by the SERS Board: *Commonwealth of Pennsylvania State Employees' Retirement Board Defined Benefit Plan Investment Policy Statement (IPS)*.

Improving customer service to our members remains a top priority for the plan. We continue to enhance our member materials, striving to make the information they provide more understandable and accessible to a range of employees. We increasingly leverage technology to deliver many of these materials electronically, allowing the plan to reduce administrative costs and employ data-driven results to help guide future communication initiatives. SERS is also working to complete its multi-year benefits processing system upgrade that is expected to further improve how we interact with our members, their account-related transactions, and payment processing.

Also, through 2020, the SERS Board and staff continued to review and act upon key initiatives based on more than 100 recommendations from the report issued in December 2018 by the Public Pension Management and Asset Investment Review Commission (part of Act 2017-5). A final report delineating SERS' actions in response to the commission's recommendations - in areas including transparency, reporting, statistical modeling, and more – was released in December 2020 and posted to the SERS website.

The Government Finance Officers Association of the United States and Canada (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to SERS for its annual comprehensive financial report for the fiscal year ended December 31, 2019. In order to be awarded a Certificate of Achievement, a government must publish an easily readable and efficiently organized annual comprehensive financial report. This report must satisfy both generally accepted accounting principles and applicable legal requirements. A Certificate of Achievement is valid for a period of one year only. We believe that our report, now referred to as the Annual Comprehensive Financial Report, continues to meet the Certificate of Achievement Program's requirements and we are submitting it to GFOA to determine its eligibility for another certificate.

We are solely responsible for the contents of this report; however, we do wish to acknowledge the significant contributions of many SERS professionals whose work to compile, quality assure, and produce it is essential.

The commitment of the agency's 200+ employees ensures that we maintain effective internal controls to assure that assets are safeguarded, transactions are properly executed, and financial statements conform to U.S. generally accepted accounting principles – all while providing effective, high-quality member services. SERS remains dedicated to providing the highest level of service to commonwealth employers, policymakers, employees, retirees, and the SERS Board. Staff at all levels strive to provide exceptional service to those who have dedicated their careers to the citizens of Pennsylvania and maintain careful stewardship of public dollars.

Respectfully submitted,

Terrill J. Sanchez
Executive Director

Sara E. McSurdy, CPA
Chief Financial Officer

SERS Mission, Vision, and Organizational Chart

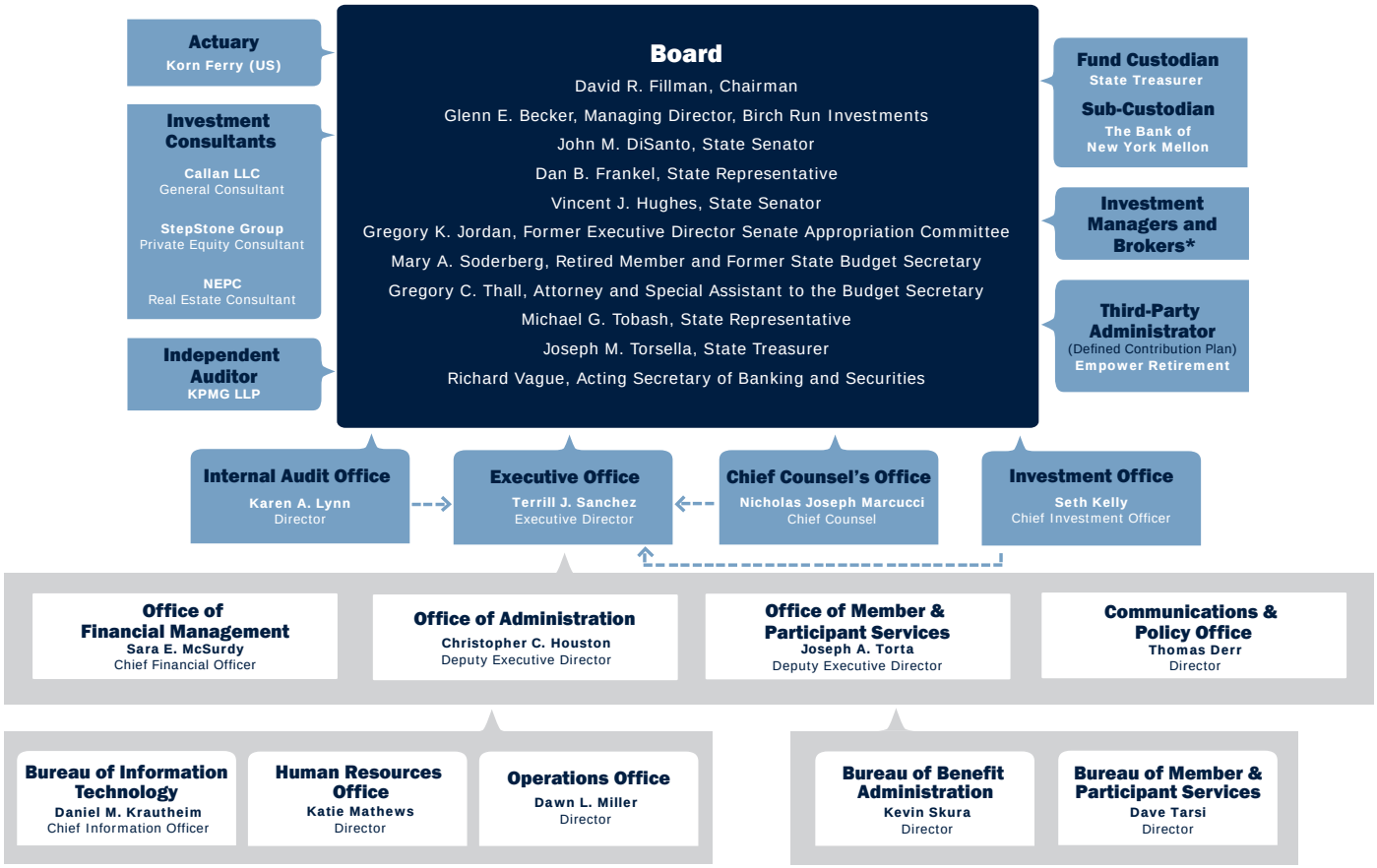
Mission

The mission of SERS is to prepare our members and participants to achieve financial success and security in retirement.

Vision

SERS' vision is to become fully funded and the recognized leader among pension organizations providing innovative, best-in-class services and products to our customers and stakeholders.

Organizational Chart



**Investment managers are listed throughout the Investment Summary on pages 61 - 87 and brokers are listed in the Schedule of Trading Broker Commissions on page 59 in the Investment Section of this ACFR.*

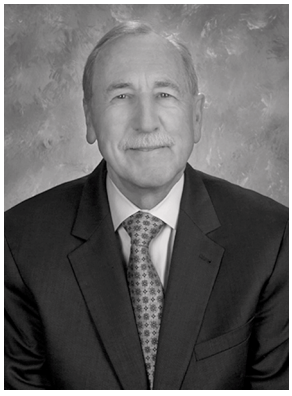
As of 12/31/20

SERS Board

December 31, 2020

Mr. David R. Fillman
Chairman

Mr. Glenn E. Becker
Managing Director, Birch Run Investments



Honorable John M. DiSanto
State Senator

Honorable Dan B. Frankel
State Representative

Honorable Vincent J. Hughes
State Senator

SERS Board
December 31, 2020

Mr. Gregory K. Jordan
Retired Member and Former Executive Director
Senate Appropriations Committee

Honorable Mary A. Soderberg
Retired Member and Former
State Budget Secretary

Mr. Gregory C. Thall
Attorney and Special Assistant to the
Budget Secretary

Honorable Michael G. Tobash
State Representative

Honorable Joseph M. Torsella
State Treasurer

Honorable Richard Vague
Acting Secretary of Banking and Securities

Financial Section

pennsylvania
STATE EMPLOYEES' RETIREMENT SYSTEM

KPMG LLP
Suite 1000
30 North Third Street
PO Box 1190
Harrisburg, PA 17108-1190

Independent Auditors' Report

The Members of the Board
Commonwealth of Pennsylvania
State Employees' Retirement System:

We have audited the accompanying financial statements of the Commonwealth of Pennsylvania State Employees' Retirement System (SERS), a component unit of the Commonwealth of Pennsylvania, as of and for the years ended December 31, 2020 and 2019, and the related notes to the financial statements, which collectively comprise the SERS' basic financial statements as listed in the table of contents.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with U.S. generally accepted accounting principles; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the fiduciary net position of the Commonwealth of Pennsylvania State Employees' Retirement System as of December 31, 2020 and 2019, and the changes in its fiduciary net position for the years then ended in accordance with U.S. generally accepted accounting principles.

KPMG LLP, a Delaware limited liability partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee.

KPMG

Other Matters

Required Supplementary Information

U.S. generally accepted accounting principles require that the management's discussion and analysis on pages 3–12 and the required supplementary information in schedules 1 through 3 on pages 46–47 be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Supplementary and Other Information

Our audits were conducted for the purpose of forming an opinion on SERS' basic financial statements. The supplementary information in schedules 4 and 5 on pages 48–49, as listed in the table of contents, related to the year ended December 31, 2020 are presented for purposes of additional analysis and are not a required part of the basic financial statements. Such information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the basic financial statements. The information has been subjected to the auditing procedures applied in the audit of the basic financial statements for the year ended December 31, 2020, and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the supplementary information included in schedules 4 and 5 related to the year ended December 31, 2020 is fairly stated in all material respects, in relation to the basic financial statements as a whole for the year ended December 31, 2020.

The introductory, investment, actuarial and statistical sections are presented for the purposes of additional analysis and are not a required part of the basic financial statements. Such information have not been subject to the auditing procedures applied in the audit of the basic financial statements and, accordingly, we do not express an opinion or provide any assurance on them.

KPMG LLP

Harrisburg, Pennsylvania
June 4, 2021

Management's Discussion and Analysis

December 31, 2020 and 2019 (unaudited)

This section presents Management's Discussion and Analysis of the Pennsylvania State Employees' Retirement System's (SERS) financial statements, as well as the significant events and conditions that affected the operations and performance of SERS during the years ended December 31, 2020, 2019, and 2018.

In addition to historical information, the Management's Discussion and Analysis includes forward-looking statements, which involve currently known facts and certain risks and uncertainties. Actual results and performance may differ materially from those expressed or implied in the forward-looking statements due to a wide range of factors including but not limited to: changes in securities markets, general economic conditions, interest rates, legislation, as well as the global pandemic and other conflicts.

Overview of the Financial Statements and Accompanying Information

SERS administers two mandatory-participation retirement plans defined by the Internal Revenue Code: the Defined Benefit Plan, for which assets are held in the State Employee Retirement Fund (Defined Benefit Plan or pension plan); and the Defined Contribution Plan, for which assets are held in a trust with ownership attributed to individual participant investment accounts. The financial statements present the financial position and activities for the Defined Benefit Plan and the Defined Contribution Plan.

(1) Financial Statements. SERS presents Statements of Fiduciary Net Position as of December 31, 2020 and 2019 as well as Statements of Changes in Fiduciary Net Position for the years then ended. These statements reflect resources available for the payment of benefits as of year end, and the sources and uses of those funds during the year.

(2) Notes to Financial Statements. The notes to financial statements are an integral part of the statements. SERS encourages readers to review them because the additional detail will provide a more complete understanding of the financial statements. Among other items, the notes provide information about SERS' organization; benefits and contributions; determination of investment values; contingencies and commitments; and actuarial liabilities and the associated methods and assumptions used to calculate them.

(3) Required Supplementary Information. The Required Supplementary Information (RSI) consists of:

- This Management's Discussion and Analysis (MD&A)
- A schedule of changes in net pension liability and related ratios
- A schedule of employer contributions
- A schedule of investment returns

(4) Other Supplementary Information Schedules. Other schedules provide details of SERS administrative, investment, and consultant expenses. Supplementary information is considered useful in understanding and evaluating the financial activities of SERS.

Financial Highlights

- There were an array of challenges during 2020, mostly resulting from the COVID-19 pandemic. The volatility in the financial markets was impacted by COVID-19, however the changes to SERS' investment strategy and asset allocation adopted in December 2019 helped yield positive investment results. SERS experienced a time-weighted rate of return on investments of 11.1% for the year ended December 31, 2020, compared to 18.8% for the year ended December 31, 2019. The return for the ten-year period ended December 31, 2020, was 8.0%, which exceeded the 7.0% investment return assumption. Despite 2020's investment gains, the full economic impact of the pandemic remains uncertain.

- In April 2020, Penn State University paid a one-time lump sum contribution of $1.06 billion toward its unfunded liability. In return for its lump sum contribution, the university will receive an annual credit against its contributions over the next 30 years.

- In June 2019, the SERS Board approved a reduction in the pension plan investment return assumption from 7.25% to 7.125%, which was effective with the December 31, 2019 valuation. In July 2020, a further reduction from 7.125% to 7.0% was made in conjunction with the five-year actuarial experience study. As part of the study, SERS' actuary recommended and the SERS Board approved several other economic and demographic assumption changes to bring assumptions in line with the plan's actual experience. The revised assumptions from the experience study were used for the December 31, 2020, valuation.

- The net position for the pension plan increased by approximately $3.9 billion for the year ended December 31, 2020, compared to an increase of approximately $4.2 billion for the year ended December 31, 2019. The increase in 2020 is mainly attributed to the combination of positive investment returns, normal contributions, and lump sum contributions exceeding the benefit payments and expenses of the plan.

- The Defined Contribution Plan opened for enrollment on January 1, 2019 and continues to grow. The net position for the Defined Contribution Plan was approximately $40.5 million as of December 31, 2020, which is an increase of approximately $28.1 million compared to December 31, 2019. The increase is attributed to contributions, investment earnings, and funding from employers, exceeding deductions of the plan. Despite the volatile markets due to COVID-19, the plan's investment options ended the year with positive returns.

- See Condensed Financial Information tables on page 12 for consolidated Defined Benefit Plan and Defined Contribution Plan information.

The Defined Benefit Plan

The Defined Benefit Plan is a traditional pension plan defined by IRC section 401(a). This plan requires mandatory contributions from both the member and employer. SERS invests the contributions to achieve returns to help ensure sufficient funds are available to make required payments to current and future retirees.

Member Contributions

Member contributions were approximately $410 million for the year ended December 31, 2020, $405 million for the year ended December 31, 2019, and $394 million for the year ended December 31, 2018. There was a slight increase in gross salaries, which were approximately $6.4 billion for 2020, $6.3 billion for 2019, and $6.2 billion for 2018. The member contribution rate is set by statute and is 6.25% of gross salary for most members.

Employer Contributions

Employer contributions were approximately $3.2 billion, $2.1 billion, and $2.0 billion for the years ended December 31, 2020, 2019, and 2018, respectively. The 2020 contributions represented an increase of $1.07 billion – or 51% – compared to 2019. The increase was mainly due to a $1.06 billion one-time lump sum contribution from Penn State University towards its unfunded liability that was made possible by Act 2019-105. As mentioned above, there was a slight increase in salaries, which was offset by a slight decrease in the composite employer rate to 33.48% from 33.59% on July 1, 2020. The $66.3 million – or 3% – contribution growth in 2019 from 2018 was due to salaries increasing as well as a slight increase in the employer rate to 33.59% from 32.93% on July 1, 2019.

Beginning in 2005, Pennsylvania law statutorily suppressed employer contribution rates, primarily through Acts 2003-40 and 2010-120. Act 2010-120 limited the rate at which employer contributions

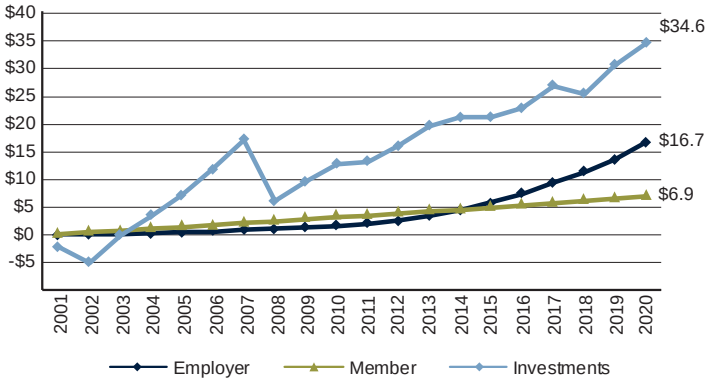
increased in any given year after fiscal year (FY) 2011-12, up to a maximum of 4.5% each year, until rate collars were no longer needed. Under this schedule, commonwealth FY 2017-18 was the first year since legislatively mandated contribution rates were enacted through Act 2010-120 that collars were no longer needed and employers paid the uncollared rate. Since FY 2017-18, employers continued to show commitment by making contributions to the Defined Benefit Plan at the actuarially required rate. The FY 2021-22 composite employer contribution rate is expected to be 33.81% of payroll.

While the above-noted suppressed employer contributions have provided budgetary relief to commonwealth agencies and the taxpayers of Pennsylvania, they are a factor influencing the pension liability. The short-term benefit, however, has resulted in the need for employers to contribute more over a 30-year period due to implied financing costs. Such financing costs are incurred because the monies were not available to invest and compound.

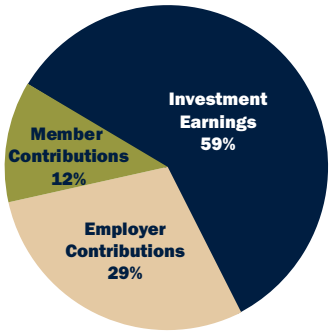
From 2001 through 2020, employer contributions totaled $16.7 billion – or 29% – of total additions to fiduciary net position, compared to $6.9 billion – or 12% – of total additions attributed to member contributions, and $34.6 billion – or 59% – of total additions attributed to investment earnings, as illustrated in the following charts.

20-Year Cumulative Additions to Fiduciary Net Position

($ billions)



20-Year Cumulative Additions to Fiduciary Net Position



Net Investment Income

SERS utilizes two methodologies when analyzing Defined Benefit Plan investment returns. The two approaches may vary from each other in any given period based on the underlying methodology used. For Governmental Accounting Standards Board (GASB) 67 accounting valuation purposes, a money-weighted return is used. A money-weighted rate of return calculates the investment performance accounting for all cash flows (contributions and withdrawals) occurring during the performance measurement period. Conversely, for investment performance reporting purposes, SERS and its investment consultants rely on a time-weighted approach. A time-weighted rate of return minimizes the impact of cash flows occurring throughout the measurement period. Defined Benefit Plan investment returns, net of manager fees, on a money-weighted basis, were 11.3%, 18.8%, and -4.5% for the years 2020, 2019, and 2018, respectively. Defined Benefit Plan investment returns, net of manager fees, on a time-weighted basis were 11.1%, 18.8%, and -4.6% for the years 2020, 2019, and 2018, respectively.

Positive investment performance contributed approximately $3.9 billion to net investment income in 2020, a net positive investment gain of approximately $5.2 billion occurred in 2019, and a net investment loss of approximately $1.4 billion occurred in 2018. Strong results across all asset classes drove overall performance for 2020 and 2019.

Management's Discussion and Analysis

December 31, 2020 and 2019 (unaudited)

SERS has reviewed and modified the Defined Benefit Plan's strategic investment plan, as necessary. In December 2019, the SERS Board adopted the *SERS Defined Benefit Plan Investment Policy Statement*. Its purpose is to outline the investment philosophy and practices of SERS and serve as the governing policy for the management of the system's defined benefit assets. In addition, the board moved to adopt the policy target asset allocation set forth in the statement. The target asset allocation is projected to achieve SERS' investment return assumption, reduce investment management fees, and increase liquid assets. The purpose of increasing liquid assets is to maintain a level of funds sufficient to pay retirement benefits and obligations during prolonged periods of market decline and potential budgetary constraints. In December 2020, the SERS Board amended the policy to realign the fixed income allocations within the portfolio to move towards a liability-driven or cash flow-driven investment strategy. The realignment of the fixed income portfolio will take place during 2021.

SERS' assets are managed by external investment managers hired by the SERS Board. SERS strives to engage the highest quality investment managers for the most cost-effective price. Many of these managers are paid a fee based on the amount of assets under management. For private market investments, the industry practice is for the limited partners to pay fees to the general partner based on commitments to the partnership during the investment period.

The Defined Benefit Plan pays the majority of its fees to managers within its Private Equity and Real Estate asset classes due to the complex and time-consuming nature of managing the investments.

Defined Benefit Plan investment expenses, which include fees paid to managers, were $155 million and $179 million for the years ended December 31, 2020 and 2019, respectively.

Benefits, Refunds, and Expenses

Benefit payments to annuitants are the most significant recurring deductions from the fiduciary net position. During 2020 and 2019, the SERS Defined Benefit Plan paid out approximately $3.6 billion and $3.5 billion in benefits and refunds, respectively.

There were approximately 5,300 new retirees added to the annuity payroll in 2020, with an average annual benefit of $30,100. There were approximately 6,100 new retirees added to the annuity payroll in 2019, with an average annual benefit of $28,800. There were more than 4,700 and 4,400 retirees removed from the rolls with an average annual benefit of $16,700 and $16,300 in 2020 and 2019, respectively. As is typical in mature pension plans, new retirees in 2020 received a higher annual benefit than those removed from the annuity payroll.

The benefits expense on the Defined Benefit Plan's financial statements consists of two primary components: monthly annuity payments and supplemental payments. Most of the supplemental payments were paid to retiring members who chose to withdraw their contributions and interest at retirement. Such withdrawals reduce the retirees' annuity payments over their remaining life. Supplemental payments were $394 million and $427 million for 2020 and 2019, respectively.

Act 2010-120 lowered the benefits earned by most employees who joined SERS on or after January 1, 2011, through December 31, 2018, by reducing the retirement benefit accrual rate, increasing normal retirement age, extending the vesting period from five years to 10 years, and other provisions. Two other important benefit-related aspects of Act 2010-120 are that retirement provisions for legislators elected after December 1, 2010 were reduced and made consistent with those of most rank-and-file employees. Despite the reduction in benefits, most Act 2010-120 employees continue to contribute 6.25% of their salary and fund a greater proportion of their own retirement benefit.

Act 2017-5 further lowered and fundamentally changed the benefits earned by most employees who joined SERS on or after January 1, 2019,

whereas a portion of the employee's retirement benefit comes from the Defined Benefit Plan that features guaranteed monthly payments for life based on a calculation. The other portion comes from the Defined Contribution Plan which is based on the employer and employee contributions and the amount of money the employee generates from their investment choices and market performance. Act 2017-5 further reduced the retirement benefit accrual rate and increased the normal retirement age under the Defined Benefit Plan. The accrual rate is determined by the employee's class of service. Employees contribute 5% or 4%, depending on whether they remain in the default class of service, A-5 or elect A-6 class of service, respectively.

It will take considerable time to realize savings from Act 2010-120 and Act 2017-5 as detailed above. SERS expects benefit expenses to rise steadily because the number of retirees added to the rolls is projected to outpace the number of retirees removed from the rolls. Additionally, despite the benefit cost reductions for new employees, the monthly annuities for retirees in the near-term are projected to be approximately 80% higher than the annuities of those being removed from the payrolls.

SERS was established in 1923, but did not pay more than $1 billion in annual benefits until 1997. SERS' Defined Benefit Plan annual benefit payments reached $2 billion in 2007 and $3 billion in 2015. Based on recent actuarial projections, the SERS Defined Benefit Plan annual benefit payments will reach $4 billion by 2024.

Growth in Annuity Payroll

	December		
	2020	2019	2018
Monthly annuity payroll ($ millions)	$266	$259	$250
Retirees	133,334	132,731	131,007

SERS' administrative expenses represented 0.1% of fiduciary net position in 2020 and 2019. All expenses were within budget.

SERS' Assets

Investments are the most significant component of SERS' assets. The total Defined Benefit Plan investment portfolio fair value was $36.2 billion for 2020, as compared to $31.2 billion for 2019. The increase in SERS' assets is mostly related to the fact that the net investment income and contributions exceeded benefit payments and expenses for the year. SERS reports investments at fair value as discussed in accounting policies note 2(c) to the financial statements. Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date.

Public equity values remained constant at $10.0 billion for 2020 and 2019, respectively. Commingled public equity values decreased to $5.2 billion for 2020, from $7.3 billion in 2019. Public equity and commingled public equity investments had favorable returns throughout the year but saw decreases in balances due to liquidations being made to align with new lower asset allocation targets. Fixed income values increased to $9.6 billion for 2020, from $4.4 billion in 2019. The increase in fixed income is primarily due to favorable returns and investments being made to align with new higher asset allocation targets.

Commingled fixed income fund values were approximately $0.4 billion for 2020 and $0.5 billion for 2019. Private equity values increased to $5.6 billion for 2020, from $4.2 billion in 2019. Most of the increase in private equity was due to contributions exceeding distributions and strong investment returns. Real estate values increased to $2.6 billion for 2020, from $2.1 billion in 2019. Hedge fund values were $1.0 billion for 2020 and 2019, respectively. Short-term investment values increased to $1.8 billion for 2020, from $1.7 billion in 2019.

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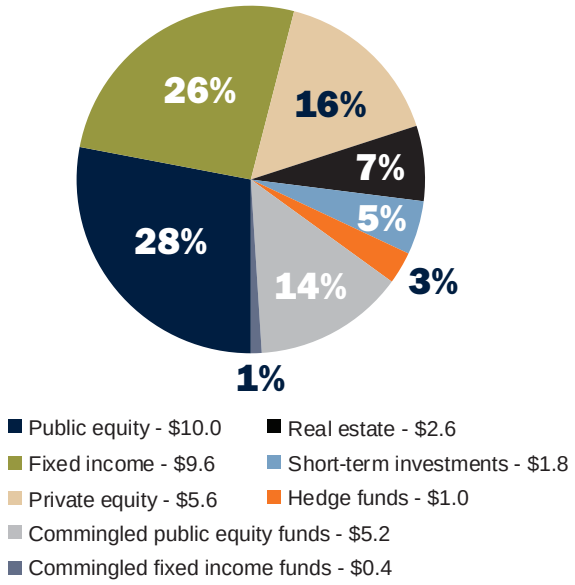
The total investment portfolio fair value of $36.2 billion for 2020 was composed as shown by the chart below:

Investments at Fair Value (2020)

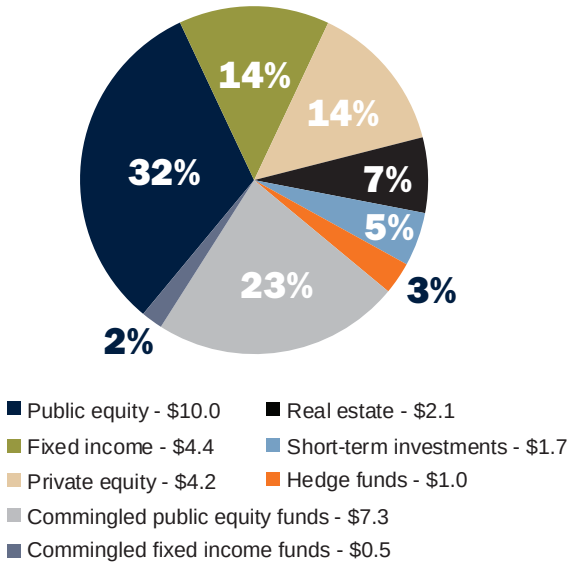
($ billions)



The total investment portfolio fair value of $31.2 billion for 2019 was composed as shown by the chart below:

Investments at Fair Value (2019)

($ billions)



SERS earns additional investment income by lending investment securities to brokers. The brokers provide collateral to SERS for borrowed securities generally equal to 102% to 105% of the borrowed securities, and SERS invests the collateral to earn interest. Income, net of expenses, from securities lending is dependent on the volume of lending generated at the custodian bank and the spreads (profits) on loaned securities.

SERS' Defined Benefit Plan earned approximately $40 million through securities lending over the last 10 years. The program's guidelines provide for investment of cash collateral in highly liquid, highly-rated securities.

As of December 31, 2020 and 2019, the fair value of loaned securities was $680 million and $687 million, respectively. The fair value of the associated collateral was $698 million and $700 million, respectively, of which $158 million and $138 million was cash, respectively.

Derivatives

SERS' Defined Benefit Plan permits investment managers to use derivatives to hedge risks and provide market exposure to various asset classes within narrowly prescribed policy guidelines. Used properly, such derivatives cost-efficiently provide exposures in the respective asset classes without disrupting Defined Benefit Plan liquidity needs. SERS' Defined Benefit Plan investment managers manage counterparty credit risk by entering into contracts with parties with credit ratings of at least investment grade and by establishing collateral requirements. SERS monitors derivative levels and types to ensure that portfolio derivatives are consistent with their intended purpose and at the appropriate level.

Liquidity

SERS' investment policy utilizes Cash as an asset class that serves as the primary source of short-term liquidity for the Defined Benefit Plan. At December 31, 2020 and 2019, the Defined Benefit Plan held approximately $0.5 billion and $1.5 billion in Cash, respectively, which is included in

short-term investments on the Statements of Fiduciary Net Position. Specific short-term investments and fixed income holdings also offer liquidity. These investments provide a stable source for meeting the cash flow needs of the plan and protect against the risk that equity investments would need to be liquidated at unfavorable values in order to pay member benefits.

Having adequate liquidity levels is especially vital for a mature pension plan that has growing benefit payments that exceed contributions into the plan.

Actuarial Valuations

Annually, the SERS Defined Benefit Plan obtains two actuarial valuations, one for financial reporting purposes under GASB 67 and one that is statutorily required for funding purposes. The funding valuation is used to set the employer contribution rate for the plan.

Every five years, the SERS Defined Benefit Plan is required to conduct an actuarial experience study to determine whether the assumptions used in its annual actuarial valuations remain accurate based on current and anticipated demographic trends and economic conditions. The actuary, under oversight of the SERS Board, reviews economic assumptions (such as the assumed future investment returns and salary increases) as well as demographic assumptions (such as employee turnover, retirement, disability, and death rates). The *19th Investigation of Actuarial Experience* covering the period 2015-2019 was released and approved by the SERS Board in July 2020.

The study recommended decreasing the investment rate of return and inflation assumptions to 7.0% and 2.5%, respectively, for 2020 from 7.125% and 2.6%, respectively, for 2019. The study also recommended reducing rates of career salary growth, more favorable annuitant mortality assumptions, and several other changes. These changes were effective with the December 31, 2020 valuation.

The previous actuarial experience study, the *18th Investigation of Actuarial Experience*, conducted for the period of 2011-2015, was released in March 2016 and was in effect for the 2019 valuation. The studies can be viewed at **www.SERS.pa.gov**.

It is important to note differences in actuarial methods for financial reporting under GASB 67 (accounting valuation) compared to those used for funding purposes (funding valuation). Key differences are shown in the following table:

	GASB 67 - Accounting Valuation	Funding Valuation
Actuarial cost method	Entry age	Variation of entry age
Asset valuation method	Fair (market) value	5-year smoothed market value

Key valuation results for the accounting valuation compared to the funding valuation for the years ended December 31, 2020 and 2019 are as shown in the following tables:

As of December 31, 2020

($ millions)

GASB 67 - Accounting Valuation		Funding Valuation	
Total Pension Liability (TPL)	$52,254	Actuarial Accrued Liability (AAL)	$55,098
Fiduciary Net Position	35,028	Actuarial Value of Assets	32,703
Net Pension Liability (NPL)	**$17,226**	**Unfunded AAL**	**$22,395**
Ratio - Fiduciary Net Position/TPL	67.0%	Funded Ratio	59.4%

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As of December 31, 2019

($ millions)

GASB 67 - Accounting Valuation		Funding Valuation	
Total Pension Liability (TPL)	$49,274	Actuarial Accrued Liability (AAL)	$52,973
Fiduciary Net Position	31,096	Actuarial Value of Assets	29,934
Net Pension Liability (NPL)	**$18,178**	**Unfunded AAL**	**$23,039**
Ratio - Fiduciary Net Position/TPL	63.1%	Funded Ratio	56.5%

Under the accounting valuation, the net pension liability decreased to $17.2 billion in 2020 from $18.2 billion in 2019. This was due to a $3.9 billion increase in the fiduciary net position mostly due to investment gains offset by benefit payments exceeding contributions. The increase in net position was offset by a $3.0 billion increase in the total pension liability mostly due to service and interest costs, impact of assumption changes resulting from the most recent experience study, offset by benefit payments and refunds of contributions. The assumption change impact includes reducing the investment rate of return to 7.0% from 7.125% and changes in several other economic and demographic assumptions. Under the funding valuation, the unfunded actuarial accrued liability decreased slightly to $22.4 billion in 2020 from $23.0 billion in 2019 due mostly to the same factors as discussed above, except the effect of current year investment income being not as impactful because of asset smoothing.

The unfunded actuarial accrued liability under the funding valuation was $5.2 billion and $4.9 billion higher than the net pension liability under the accounting valuation in 2020 and 2019, respectively. The more favorable result under the accounting valuation can be specifically attributed to the actuarial cost method required under GASB 67. The entry-age actuarial cost method apportioned more of the pension costs of certain members to the normal cost and therefore lowered the amount apportioned to the unfunded liability. In 2020 and 2019, respectively, the benefit from using the actuarial cost method was compounded by the fact that current investment earnings were recognized immediately in the fiduciary net position balance of each respective year as opposed to being deferred and smoothed into assets over five years under the funding valuation.

The Defined Contribution Plan

On June 12, 2017, Governor Wolf signed Act 2017-5 into law. The law established two new side-by-side hybrid defined benefit/defined contribution benefit options and a new defined contribution-only option for all state employees, excluding most hazardous duty employees, who first enter SERS membership on or after January 1, 2019. Additionally, all legacy SERS members had a one time, irrevocable option to select one of the three new retirement benefit options.

While new employees are automatically enrolled in the hybrid Defined Benefit/Defined Contribution Plan A-5 class of service, they have the option to elect the other hybrid Defined Benefit/Defined Contribution Plan option A-6 class of service, or to join the stand-alone Defined Contribution Plan. The Defined Contribution Plan, for all options, has three-year vesting for employer contributions and immediate vesting for employee contributions.

The SERS Board selects the investment options offered through the Defined Contribution Plan, and contracts with investment managers and with a third-party administrator (TPA) for the plan. The employee defined contribution accounts are maintained by the TPA. Employee and employer contributions for the Defined Contribution Plan are deposited into participants' individual investment accounts. Employees may invest their money in several investment options including a range of target date funds, equity funds, fixed income funds, a short-term investment fund, and the self-directed brokerage option. If no active selection

is made, contributions will be defaulted into one of the target date funds. Most participants are invested in the target date funds. The benefit to which a participant is entitled to is their vested account balance at termination. Distribution of benefits can be made in installments, lump sum payments, or through an annuity.

The Defined Contribution Plan continued to grow in its second year of existence. There were approximately 13,200 and 8,000 defined contribution accounts as of December 31, 2020 and 2019, respectively. The net position of the Defined Contribution Plan was approximately $40.5 million as of December 31, 2020, and $12.4 million as of December 31, 2019. Employee contributions were approximately $14.8 million for the year ended December 31, 2020, and $6.1 million for the year ended December 31, 2019. Employer contributions were approximately $7.7 million for the year ended December 31, 2020, and approximately $2.8 million for the year ended December 31, 2019. Net investment income was approximately $5.0 million for the year ended December 31, 2020, and $673,000 for the year ended December 31, 2019. The plan distributed approximately $304,000 in benefits and refunds for the year ended December 31, 2020, and $72,000 for the year ended December 31, 2019.

The fees, costs, and expenses of administering this plan were paid by the commonwealth and other participating employers. There is no administrative charge to participants. $4.6 million and $3.9 million was received in 2020 and 2019, respectively to cover the administration of the plan. Combined, these funds helped to pay expenses totaling approximately $3.7 million and $5.2 million for the years ended December 31, 2020 and 2019, and respectively.

Act 2020-94, which was passed in the fall of 2020, retroactively allows the plan to use unvested employer contributions occurring after June 30, 2020, to offset administrative costs to the plan. These monies are kept in a plan-level forfeiture account with the TPA and will offset future administrative charges to employers. Prior to this act, the monies were set aside for employers to use to offset future contributions to the plan.

Pennsylvania Act 2019-105

Governor Wolf signed House Bill 1982 into law as Act 2019-105 on November 27, 2019. The law allows eligible employers to enter into an agreement with the SERS Board to make a one-time lump sum payment of 75% to 100% of their respective unfunded accrued liability. SERS' actuaries will calculate the portion of the unfunded accrued liability that an eligible employer is liable for based on SERS' most recent valuation report. The eligible employer will receive credit against future actuarially determined contributions on a periodic basis that coincides with its existing schedule for making employer contributions to the system. With limited exceptions, this schedule is fixed once it is set. The lump sum payment covers only liabilities accrued as of the date of the calculation. Future changes in liability, whether gains or losses, will attach to the employer as if the advance payment was not made. Agreements must be entered into by December 31, 2024, and the lump sum payments must be made by May 1, 2025.

In April 2020, Penn State University paid a one-time lump sum contribution of $1.06 billion toward its unfunded liability. In return, the university will receive an annual credit against their contributions over the next 30 years. The credit totals nearly $93.3 million for 20 years and then decreases over the final 10 years beginning at nearly $72.6 million and ending at approximately $2.3 million in 2049. The lump sum payment exclusively benefits Penn State University and does not impact other employers in the pension plan. These funds are part of the general assets of SERS and will not be segregated or invested separately for the account or benefit of Penn State University. This lump sum payment is included as employer contributions on the 2020 Statement of Changes in Fiduciary Net Position.

Management's Discussion and Analysis

December 31, 2020 and 2019 (unaudited)

Condensed Financial Information

($ millions)

Fiduciary Net Position

	2020	Increase/ (Decrease)	2019	Increase/ (Decrease)	2018
Total investments	$36,252	$5,041	$31,211	$4,012	$27,199
Net other assets, liabilities, and deferrals	(1,184)	(1,082)	(102)	156	(258)
Net position restricted for pensions and held in trust for defined contribution plan participants	**$35,068**	**$3,959**	**$31,109**	**$4,168**	**$26,941**

Changes in Fiduciary Net Position

	2020	Increase/ (Decrease)	2019	Increase/ (Decrease)	2018
Contributions	$3,619	$1,090	$2,529	$86	$2,443
Annual employer charge/commonwealth funding	5	1	4	(1)	5
Net investment income/(loss)	3,923	(1,253)	5,176	6,618	(1,442)
Benefit, refunds, and administrative expenses	3,588	47	3,541	119	3,422
Cumulative effect of change in accounting principle	—	—	—	48	(48)
Net increase/(decrease) in net position restricted for pensions and held in trust for defined contribution plan participants	**$3,959**	**($209)**	**$4,168**	**$6,632**	**($2,464)**

Statement of Fiduciary Net Position

December 31, 2020

($ thousands)

	Defined Benefit Plan	Defined Contribution Plan	Total
Assets			
Receivables			
Plan members/participants	$2,681	$182	$2,863
Employers	42,209	57	42,266
Investment income	69,994	1	69,995
Investment proceeds and other receivables	331,395	—	331,395
Miscellaneous	783	29	812
Total receivables	**447,062**	**269**	**447,331**
Investments			
Short-term investments	1,838,986	6,432	1,845,418
Fixed income	9,543,858	—	9,543,858
Common and preferred stocks	10,037,180	—	10,037,180
Hedge funds	1,019,416	—	1,019,416
Real estate	2,585,656	—	2,585,656
Private equity	5,626,487	—	5,626,487
Target date funds	—	31,445	31,445
Commingled public equity funds	5,206,066	2,844	5,208,910
Commingled fixed income funds	349,692	450	350,142
Other investments	3,765	41	3,806
Total investments	**36,211,106**	**41,212**	**36,252,318**
Securities lending collateral pool	158,109	—	158,109
Total assets	**36,816,277**	**41,481**	**36,857,758**
Total deferred outflows - OPEB	5,932	2,199	8,131
Total assets and deferred outflows	**36,822,209**	**43,680**	**36,865,889**
Liabilities			
Accounts payable and accrued expenses	69,224	665	69,889
Investment purchases and other liabilities	1,523,165	70	1,523,235
Obligations under securities lending	158,109	—	158,109
Net OPEB liability	27,715	1,575	29,290
Total liabilities	**1,778,213**	**2,310**	**1,780,523**
Total deferred inflows - OPEB	16,266	878	17,144
Total liabilities and deferred inflows	**1,794,479**	**3,188**	**1,797,667**
Net position restricted for pensions and held in trust for defined contribution plan participants	**$35,027,730**	**$40,492**	**$35,068,222**

See accompanying notes to basic financial statements.

Statements of Fiduciary Net Position

Statement of Fiduciary Net Position

December 31, 2019

($ thousands)

	Defined Benefit Plan	Defined Contribution Plan	Total
Assets			
Receivables			
Plan members/participants	$1,393	$30	$1,423
Employers	104,922	20	104,942
Investment income	63,855	7	63,862
Investment proceeds and other receivables	247,834	—	247,834
Miscellaneous	3,198	—	3,198
Total receivables	**421,202**	**57**	**421,259**
Investments			
Short-term investments	1,661,979	4,434	1,666,413
Fixed income	4,386,907	—	4,386,907
Common and preferred stocks	10,003,701	—	10,003,701
Hedge funds	1,005,418	—	1,005,418
Real estate	2,114,407	—	2,114,407
Private equity	4,193,050	—	4,193,050
Target date funds	—	7,898	7,898
Commingled public equity funds	7,269,266	808	7,270,074
Commingled fixed income funds	559,587	150	559,737
Other investments	3,021	—	3,021
Total investments	**31,197,336**	**13,290**	**31,210,626**
Securities lending collateral pool	137,604	—	137,604
Total assets	**31,756,142**	**13,347**	**31,769,489**
Total deferred outflows - OPEB	3,122	667	3,789
Total assets and deferred outflows	**31,759,264**	**14,014**	**31,773,278**
Liabilities			
Accounts payable and accrued expenses	52,995	882	53,877
Investment purchases and other liabilities	427,464	28	427,492
Obligations under securities lending	137,604	—	137,604
Net OPEB liability	23,229	375	23,604
Total liabilities	**641,292**	**1,285**	**642,577**
Total deferred inflows - OPEB	21,653	332	21,985
Total liabilities and deferred inflows	**662,945**	**1,617**	**664,562**
Net position restricted for pensions and held in trust for defined contribution plan participants	**$31,096,319**	**$12,397**	**$31,108,716**

See accompanying notes to basic financial statements.

Statement of Changes in Fiduciary Net Position

Year Ended December 31, 2020

($ thousands)

	Defined Benefit Plan	Defined Contribution Plan	Total
Additions			
Contributions			
Plan members/participants	$409,637	$14,799	$424,436
Employers	3,186,445	7,733	3,194,178
Total contributions	**3,596,082**	**22,532**	**3,618,614**
Annual employer charge	—	4,556	4,556
Investment income			
From investing activities			
Net appreciation in fair value of investments	3,659,500	4,956	3,664,456
Interest	199,398	27	199,425
Dividends	162,817	—	162,817
Real estate income	48,510	—	48,510
Miscellaneous income	2,059	—	2,059
Total investing activities income	**4,072,284**	**4,983**	**4,077,267**
Investment expenses	(155,361)	(12)	(155,373)
Net income from investing activities	3,916,923	4,971	3,921,894
From securities lending activities			
Securities lending income	2,617	—	2,617
Securities lending expenses	(261)	—	(261)
Net income from securities lending activities	2,356	—	2,356
Net investment income	3,919,279	4,971	3,924,250
Total additions	**7,515,361**	**32,059**	**7,547,420**
Deductions			
Benefits	3,538,634	201	3,538,835
Refunds of contributions	18,094	103	18,197
Administrative expenses	27,222	3,660	30,882
Total deductions	**3,583,950**	**3,964**	**3,587,914**
Net increase	3,931,411	28,095	3,959,506
Net position restricted for pensions and held in trust for defined contribution plan participants			
Balance, beginning of year	31,096,319	12,397	31,108,716
Balance, end of year	**$35,027,730**	**$40,492**	**$35,068,222**

See accompanying notes to basic financial statements.

Statements of Changes in Fiduciary Net Position

Statement of Changes in Fiduciary Net Position

Year Ended December 31, 2019

($ thousands)

	Defined Benefit Plan	Defined Contribution Plan	Total
Additions			
Contributions			
Plan members/participants	$404,769	$6,124	$410,893
Employers	2,114,882	2,836	2,117,718
Total contributions	**2,519,651**	**8,960**	**2,528,611**
Commonwealth funding	—	3,852	3,852
Investment income			
From investing activities			
Net appreciation in fair value of investments	4,901,079	578	4,901,657
Interest	162,152	97	162,249
Dividends	182,853	—	182,853
Real estate income	101,283	—	101,283
Miscellaneous income	5,269	—	5,269
Total investing activities income	**5,352,636**	**675**	**5,353,311**
Investment expenses	(179,344)	(2)	(179,346)
Net income from investing activities	5,173,292	673	5,173,965
From securities lending activities			
Securities lending income	2,587	—	2,587
Securities lending expenses	(255)	—	(255)
Net income from securities lending activities	2,332	—	2,332
Net investment income	5,175,624	673	5,176,297
Total additions	**7,695,275**	**13,485**	**7,708,760**
Deductions			
Benefits	3,490,311	52	3,490,363
Refunds of contributions	22,360	20	22,380
Administrative expenses	23,275	5,185	28,460
Total deductions	**3,535,946**	**5,257**	**3,541,203**
Net increase	4,159,329	8,228	4,167,557
Net position restricted for pensions and held in trust for defined contribution plan participants			
Balance, beginning of year	26,936,990	4,169	26,941,159
Balance, end of year	**$31,096,319**	**$12,397**	**$31,108,716**

See accompanying notes to basic financial statements.

(1) Organization and Description of Pennsylvania State Employees' Retirement System (SERS)

(a) Organization

SERS was established as of June 27, 1923, under the provisions of Public Law 858, No. 331. SERS was developed as an independent administrative agency of the board, which exercises control and management of SERS, including the investment of its assets. The SERS Board has 11 members including the State Treasurer (ex officio), the Secretary of Banking and Securities (ex officio), two Senators, two members of the House of Representatives, and five members appointed by the Governor, one of whom is an annuitant of SERS. At least five board members must be active members of SERS and at least two must have 10 or more years of credited service.

SERS is the administrator of the State Employees' Retirement Fund (Defined Benefit Plan or pension plan), which is a cost-sharing multiple employer defined benefit pension plan. SERS is also the administrator of the State Employees' Defined Contribution Plan, which was established as part of Act 2017-5. The Defined Contribution Plan opened for enrollment on January 1, 2019. Both the Defined Benefit Plan and Defined Contribution Plan were established by the Commonwealth of Pennsylvania (commonwealth) to provide retirement benefits for employees of state government and certain independent agencies. The Defined Benefit and Defined Contribution Plans operate under separate trusts.

SERS is a component unit of the commonwealth, and the Defined Benefit and Defined Contribution Plans are included in the commonwealth's financial report as pension trust funds.

Membership in SERS is mandatory for most state employees. Members and employees of the General Assembly, certain elected or appointed officials in the executive branch, department heads, and certain employees in the field of education are not required but are given the option to participate. Participation in the Defined Benefit Plan, which remained unchanged as of December 31, 2020 and 2019, includes 38 employers with the commonwealth being classified as its largest employer. The commonwealth comprises 65 agencies and when everything is evaluated separately, the Defined Benefit Plan has a total of 102 participating employers/agencies. Participation in the Defined Contribution Plan includes 20 employers and the commonwealth is classified as its largest employer. The commonwealth comprises 57 agencies and when everything is evaluated separately, the Defined Contribution Plan has a total of 76 participating employers/agencies as of December 31, 2020. As of December 31, 2019, participation in the Defined Contribution Plan included 18 employers. The commonwealth comprised 54 agencies and when everything was evaluated separately, the Defined Contribution Plan had a total of 71 participating employers/agencies. Additional employers/agencies will join the Defined Contribution Plan as they hire employees who are mandated to be in the plan. At December 31, 2020 and 2019, SERS' membership consisted of the following:

SERS Membership

	2020	2019
Defined Benefit Plan		
Inactive plan members or beneficiaries currently receiving benefits	133,334	132,731
Inactive plan members entitled to but not yet receiving benefits	6,856	6,752
Active plan members	100,962	102,850
Total members	**241,152**	**242,333**
Defined Contribution Plan		
Inactive accounts	2,925	864
Active participants contributing to plan	10,237	6,938
Total participants	**13,162**	**7,802**

As a result of the hybrid benefit structure established by Act 2017-5, certain employees may be included in both the defined benefit and defined contribution figures above.

(b) Defined Benefit Plan Benefits

The SERS Defined Benefit Plan provides retirement, death, and disability benefits. Cost of Living Adjustments (COLA) are provided ad hoc at the discretion of the General Assembly. Article II of the Commonwealth of Pennsylvania's Constitution assigns the authority to establish and amend the benefit provisions of the pension plan to the General Assembly. Member retirement benefits are determined by taking years of credited service multiplied by the final average salary multiplied by the annual accrual rate.

Most employees who entered SERS membership prior to January 1, 2011, and who retire at age 60 with three years of service, or at any age with 35 years of service, are entitled to a full retirement benefit. Members of the General Assembly and certain employees classified in hazardous duty positions can retire with full benefits at age 50, with at least three years of service. Act 2010-120 preserved all benefits in place for members but mandated a number of benefit reductions for new members effective January 1, 2011, through December 31, 2018. The Act created a class of service in which members earn a benefit that accrues at 2% of the member's final average salary instead of 2.5% each year and vests in 10 years instead of five. The full retirement age is 65 for most employees who entered SERS membership after January 1, 2011, and age 55 for members of the General Assembly and certain employees classified in hazardous duty positions. Act 2017-5 changed the benefit structure for most new employees effective January 1, 2019, which created two hybrid plan options as well as a defined contribution-only plan option. The two hybrid plan options contain a Defined Benefit Plan component with a full retirement age of 67 that accrues at 1.25% or 1% of the member's final average salary.

Most members of SERS, and all state employees hired after June 30, 2001, and prior to January 1, 2011 (except state police officers and certain members of the judiciary and legislators), are Class AA members. Each class of benefits is based on a multiple of the base accrual rate of 2%, which is called the multiplier. The multiplier for Class AA is 1.25, which translates into an annual benefit of 2.5% of the member's highest three-year average salary multiplied by years of service and became effective for members July 1, 2001. The general annual benefit for Class A members is 2% of the member's highest three-year average salary multiplied by years of service.

State police are entitled to a benefit equal to a percentage of their highest annual salary, excluding their year of retirement. The benefit is 75% of salary for 25 or more years of service and 50% of salary for 20-24.99 years of service. Judges are entitled to a benefit of 4% of final average salary for each of the first 10 years of service and 3% for subsequent years. Magisterial District Judges are entitled to a benefit of 3% of final average salary for each year of service. Legislators taking office before December 1, 2010, are Class D-4. The multiplier for Class D-4 is 1.5, which translates into an annual benefit of 3% of the final average salary for each year of service.

Act 2010-120 created an A-3 class of service and an optional A-4 class for most employees who enter SERS membership for the first time on or after January 1, 2011, and December 1, 2010, for legislators newly elected in November 2010, through December 31, 2018. On or after January 1, 2019, class A-3 is only offered to hazardous duty employees. Employees who enter SERS membership under Act 2010-120 enter as members of the A-3 class with a 45-day window to elect membership in the optional A-4 class. The general annual benefit for Class A-3 members is 2% of the member's highest three-year average salary multiplied by years of service, while the Class A-4 benefit accrual rate is 2.5%.

Act 2017-5 created a new A-5 hybrid class of service with optional hybrid A-6 class and straight defined contribution-only plan options for state employees (excluding most hazardous duty employees), who first enter SERS membership on or after January 1, 2019. Employees who enter SERS membership under Act 2017-5 enter as members of the A-5 class with a 45-day window to

elect membership in the optional A-6 class or straight Defined Contribution Plan. The general annual benefit for Class A-5 members is 1.25% of an average of the highest five calendar years of the member's salary multiplied by years of service, while the Class A-6 benefit accrual rate is 1%. Those members choosing the straight Defined Contribution Plan do not have a benefit accrual rate and retire with their contributions, employer contributions, if vested, and any investment gains on those contributions.

According to the State Employees' Retirement Code (retirement code), all obligations of SERS will be assumed by the commonwealth, should SERS terminate.

(c) Defined Benefit Plan Contributions
SERS' retirement code (71 Pa. C.S.) requires that all SERS participating employers make contributions to the pension plan on behalf of all active members and annuitants necessary to fund the liabilities and provide the annuity reserves required to pay benefits. The SERS Defined Benefit Plan funding policy, as set by the board, provides for periodic active member contributions at statutory rates. The Defined Benefit Plan funding policy also provides for periodic employer contributions at actuarially determined rates based on the Defined Benefit Plan funding valuation, expressed as a percentage of annual retirement covered payroll, such that they, along with employee contributions and an actuarially determined rate of investment return, are adequate to accumulate assets to pay benefits when due. In FY 2017-18, the commonwealth paid the full actuarially required rate after being collared in previous years due to Act 2010-120. At December 31, 2020 and 2019, the actuarially determined rate was 33.48% and 33.59%, respectively. Act 2017-5 includes a savings "plow-back" provision requiring that the annual savings achieved through SERS' benefit changes flow back into the Defined Benefit Plan through the employer contribution rate rather than to other non-pension obligations.

Employer rates are computed based on SERS' fiscal year end of December 31 and applied to the commonwealth based on its fiscal year end of June 30; therefore, the employer contribution rates, in effect for SERS' full year ended December 31, reflect a blended average of calculated rates. As of December 31, 2020 and 2019, the blended contribution rates were 33.54% and 33.26%, respectively.

The general membership contribution rate for all Class A and Class AA members is 5% and 6.25% of salary, respectively. The general membership contribution rate under Act 2010-120 for A-3 and A-4 members is 6.25% and 9.3% of salary, respectively. The general membership contribution rate under Act 2017-5 for A-5 and A-6 members is 5% and 4% of salary, respectively. The contribution rate for Class D-4 Members of the General Assembly is 7.5%. Judges and Magisterial District Judges have the option of electing special membership classes requiring a contribution of 10% and 7.5%, respectively. All Defined Benefit Plan employee contributions are recorded in individually identified accounts that are credited with interest, calculated at 4% per annum, as mandated by statute. Accumulated employee contributions and credited interest vest immediately and are returned to the employee upon termination of service if the employee is not eligible for other benefits or elects to waive their benefits.

Act 2019-105 was signed into law on November 27, 2019. Act 2019-105 allows eligible employers to enter into an agreement with the SERS Board to make a one-time lump sum payment of 75% to 100% of their respective unfunded accrued liability. This respective unfunded accrued liability is calculated by SERS' actuaries and is based on SERS' most recent valuation report. An annual setoff schedule is also calculated by SERS' actuaries and is equal to the value of the one-time lump sum payment compared to the employer's unfunded accrued liability as of a specified determination date. The eligible employer will then receive credit toward future actuarially determined contributions in periodic amounts specified in this setoff schedule for up to 30 years following the lump sum payment. The setoff schedule will coincide with the employer's existing schedule for

making employer contributions to SERS. With limited exceptions, the setoff schedule is fixed once it is set. The lump sum payment covers only liabilities accrued as of the specified determination date. Future changes in liability, whether gains or losses, will attach to the employer as if the advance payment was not made. Agreements must be entered into by December 31, 2024, and the lump sum payments must be made by May 1, 2025.

Penn State University was the first of SERS' eligible employers to take advantage of Act 2019-105. In April 2020, Penn State submitted a one-time lump sum payment of $1.06 billion toward its unfunded liability. In return, the university will receive an annual credit against their contributions over the next 30 years. The credit totals nearly $93.3 million for the first 20 years and then decreases over the final 10 years beginning at nearly $72.6 million and ending at approximately $2.3 million in 2049. During 2020, Penn State used $50.3 million of these credits to reduce their required contributions. The lump sum payment exclusively benefits Penn State University and does not impact other employers in the pension plan. These funds are part of the general assets of SERS and will not be segregated or invested separately for the account or benefit of Penn State University. As part of the funding valuation, SERS' actuaries added the impact of the future setoff amounts to the unfunded liability when calculating the required contribution rates for all employers. By not recognizing any setoff amounts in this calculation, it allowed the effect of the advanced payment to be allocated only to Penn State University and have no expected effect on the contributions due from the other employers. The lump sum payment is included in employer contributions on the 2020 Statement of Changes in Fiduciary Net Position, and throughout the financial statements where employer contributions are reported.

(d) Defined Contribution Plan

The SERS retirement code requires that all SERS participating employers make contributions to the Defined Contribution Plan on behalf of all active participants. SERS' funding policy, as set by the SERS Board, provides for periodic employer and active participant contributions at statutory rates.

Participants in the A-5 class, A-6 class, and defined contribution-only plan option contribute 3.25%, 3.5%, and 7.5% to the plan, respectively. Participants may also make additional voluntary contributions to the plan. Employers contribute 2.25%, 2%, and 3.5% for participants in the A-5 class, A-6 class, and defined contribution-only plan option, respectively. Employers do not match participant voluntary contributions to the plan. Participants are also permitted to transfer or roll over monies into the plan from other qualified plans.

While participant contributions are immediately vested, the employer contributions are not vested until a participant earns three eligibility points. Eligibility points are generally credited based on hours worked in a calendar year.

If a participant terminates employment before earning three eligibility points, any unvested employer contributions are returned to the Defined Contribution Plan. Terminations up through June 30, 2020 are set aside for employers to use to offset future contributions of the plan. With the passing of Act 2020-94, terminations from July 1, 2020 and after are to be used to offset future administrative costs to the plan. These monies are kept in forfeiture accounts with the third-party administrator (TPA). During the years ended December 31, 2020 and 2019, employer contributions were reduced by $250,000 and $30,000, respectively. There were $888,000 and $210,000 in forfeitures available for future use as of December 31, 2020 and 2019, respectively.

Each participant in the Defined Contribution Plan holds an individual account with the plan's TPA. The TPA is paid a fee for administering the plan. This TPA fee, and other administrative fees, costs and expenses are incurred to operate by the plan. While the General Assembly provided direct funding through commonwealth budget appropriations for the startup and first year of the plan, Act 2020-23 authorized the SERS Board to

assess all employers a per-participant charge for the administrative fees, costs, and expenses of the plan. The per-participant charge was approved by SERS Board and served as the funding mechanism for the plan during commonwealth FY 2020-21.

Participant accounts are credited with the participant's contributions as well as their employer's contributions and are adjusted for the investment earnings and investment management expenses associated with the investment options chosen by the participant. Participants can choose to invest their money in any of several investment options including a range of target date funds, equity funds, fixed income funds, a short-term investment fund, and a self-directed brokerage option.

The benefit to which a participant is entitled to is their vested account balance at termination. Distribution of benefits can be made in installments, lump sum payments, or through an annuity. Participants are also permitted to transfer or roll over monies out of the plan into other qualified plans.

(e) COVID-19 Impacts
The ongoing COVID-19 pandemic has caused significant disruptions in U.S. and global economies. The full extent and duration of the impact of COVID-19 on operations and financial performance is currently still unknown, and depends on future developments that are uncertain and unpredictable, including the duration; spread; and severity of the pandemic, actions taken to treat the virus, its impact on capital and financial markets on a macro-scale, and any new information that may emerge concerning the virus.

(2) Summary of Significant Accounting Policies

(a) Basis of Accounting
SERS' financial statements are prepared using the accrual basis of accounting and economic resources measurement focus. Plan member contributions are recognized in the period in which the contributions are due. Employer contributions are recognized when due and the employer has a legal requirement to provide the contributions. Benefits, disbursements, and refunds are recognized when due and payable in accordance with the terms of the plans. Investment purchases and sales are recorded on a trade-date basis.

(b) Use of Estimates
Management of SERS has made certain estimates and assumptions relating to the reporting of assets and liabilities, and the disclosure of contingent assets and liabilities to prepare these financial statements in conformity with U.S. generally accepted accounting principles. Actual results could differ from those estimates.

(c) Valuation of Investments
SERS investments are reported at fair value. Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. U.S. government securities and corporate and foreign bonds and notes are valued based on matrix pricing. Commingled public equity funds and common and preferred stocks are generally valued based on published market prices and quotations at the close of business from national security exchanges and securities pricing services. Private equity, real estate, hedge funds, target date funds, self-directed brokerage accounts, and commingled fixed income funds are reported at fair value as estimated and reported by general partners, based upon the underlying net asset value (NAV) of the fund or partnership as a practical expedient of fair value. Adjustments are required when SERS expects to sell the investment at a value other than NAV.

The investments in short-term investment funds, including those managed by the treasurer of the commonwealth, are reported at amortized cost. The securities lending collateral pool, which is operated by the securities lending agent, is also accounted for at amortized cost.

Unsettled investment sales are reported as investment proceeds receivable and unsettled investment purchases are reported as investment

purchases payable. Investment expenses consist of investment managers' fees and those expenses directly related to SERS investment operations.

(d) Commitments
As of December 31, 2020 and 2019, SERS' Defined Benefit Plan had contractual commitments totaling approximately $4.2 billion and $4.8 billion, respectively, to fund future private equity and real estate investments over the next several years.

(e) Federal Income Taxes
The Internal Revenue Service (IRS) issued a favorable tax determination letter on May 19, 2017, qualifying the Defined Benefit Plan as a Governmental Plan under the Internal Revenue Code (IRC). Therefore, member contributions to SERS are federal income tax deferred.

(f) Risk Management
SERS is exposed to various liabilities and risks of loss related to theft or destruction of assets, injuries to employees, and court challenges to fiduciary decisions. SERS is accorded sovereign immunity as an administrative agency of the commonwealth. SERS participates in certain commonwealth pooled insurance programs and requires asset managers to carry certain insurance coverage. SERS is self-insured for fiduciary, director, and officer liability. During the past three fiscal years, SERS insurance settlements did not exceed insurance coverage.

(g) Interfund Transactions
Interfund transfers of assets take place on a regular basis between the Defined Benefit Plan and Defined Contribution Plan. Interfund activity is used to properly align expenses with each plan.

(3) Legally Required Reserves
The retirement code requires the maintenance of the following reserve accounts representing the net position held for future and current benefit payments.

The **Members' Savings Account** accumulates contributions and interest earnings of active employees. Member balances are transferred to the Annuity Reserve Accounts as members retire.

The **State Accumulation Account** accumulates contributions of the employer and the net earnings of the pension plan. Funds are transferred to the Annuity Reserve Accounts as members retire. The amount transferred is actuarially determined. Negative balances represent the amounts transferred to other reserve account balances in excess of accumulated employer contributions and net earnings.

The **Directed Commissions Reserve Account** accumulates the income from the commission recapture program less any administrative expenses. SERS utilizes brokers to rebate a percentage of trade commissions directly to SERS. During the years ended December 31, 2020 and 2019, SERS earned approximately $75,000 and $106,000 of income resulting from the commission recapture program, respectively. During 2020 and 2019, no administrative expenditures were made from the program. At December 31, 2020 and 2019, SERS had accumulated commission reserves of $3.6 million. These commission reserves can be used to pay for future administrative expenditures.

The **Annuity Reserve Accounts** are the accounts from which all death and retirement benefits and supplemental annuities are paid. The balances in these accounts are actuarially determined.

The **Interest Reserve Account** accumulates all income earned by the pension plan. In addition, all administrative and investment expenses incurred by the pension plan and the board necessary for the operation of SERS are paid from this account. Any balance in this reserve is transferred to the State Accumulation Account at year end.

The **Benefits Completion Plan (BCP) Reserve Account** accumulates all BCP employer contributions and net earnings of the pension plan less any benefits paid out of the pension plan. Act 2002-234 amended the retirement code that directs the SERS Board to establish and serve as trustee of a retirement benefit plan that is in

conformity with IRC Section 415(m), the BCP. The BCP is a separate trust fund established to provide benefits to all annuitants of SERS' Defined Benefit Plan and their survivor annuitants and beneficiaries whose retirement benefit exceeds the IRC Section 415(b) limits. A monthly annuity or death benefit is paid under the BCP only if a corresponding monthly annuity or death benefit is paid from the Defined Benefit Plan to the extent permitted by IRC Section 415(b) and the retirement code. There were 26 and 25 individuals receiving benefits from the BCP at December 31, 2020 and 2019, respectively.

Account balances at December 31, 2020 and 2019 are as follows:

Account Balances

($ thousands)

	2020	2019
Members' savings account	$5,327,815	$5,183,195
State accumulation and interest reserve accounts	(2,063,337)	(3,745,634)
Directed commissions reserve account	3,636	3,561
Annuity reserve accounts		
Annuitants and beneficiaries	28,283,167	26,421,596
State police	3,422,353	3,183,524
Enforcement officers	49,030	46,423
Benefit completion plan reserve account	5,066	3,654
Total	**$35,027,730**	**$31,096,319**

The **State Employees' Defined Contribution Trust** accumulates Defined Contribution Plan participant and employer contributions, investment earnings, and plan expenses. The trust is comprised of individual participant investment accounts and administrative income received to cover plan costs. The assets of the plan are held in trust for the exclusive benefit of the participants and their beneficiaries and may be used for the payment of the fees, costs, and expenses related to the administration of the plan. Starting July 1, 2020, all fees, costs, and expenses of administering the plan are being assessed to employers as a per-participant charge. Prior to July 1, all fees, costs, and expenses of administering the plan were covered by the commonwealth.

(4) Investments

As provided by statute, the SERS Board has exclusive control and management responsibility of the Defined Benefit Plan and the Defined Contribution Plan with full power to invest or select investment options for the respective plans. In exercising its fiduciary responsibility to SERS' collective membership, the SERS Board is governed by the prudent investor rule in establishing investment policy. The prudent investor rule requires the exercise of that degree of judgment, skill, and care under the circumstances then prevailing which investors of prudence, discretion, and intelligence, who are familiar with such matters, exercise in the management of their own affairs, not in regard to speculation, but in regard to permanent disposition of the funds, considering the probable income to be derived there from, as well as the probable safety of their capital. The SERS Board has adopted *SERS' Defined Benefit Plan Investment Policy Statement and the 401(a) Defined Contribution Plan Statement of Investment Policy* to formally document investment objectives and responsibilities. These policies, as well as applicable state law, establishes guidelines for permissible investments of SERS.

Fair Value Hierarchy

SERS measures and records its investments using fair value measurement guidelines established by generally accepted accounting principles. The guidelines use a fair value hierarchy that is broken down into three levels based on inputs that market participants would use in valuing assets and liabilities derived from market data as follows:

- **Level 1 inputs**: are quoted prices in active markets for identical assets or liabilities.

- **Level 2 inputs**: are quoted prices for similar assets or liabilities in active markets, quoted prices for identical or similar assets or liabilities in markets that are not active, or other than quoted prices that are observable.

- **Level 3 inputs**: are unobservable inputs used to measure fair value if relevant observable inputs are not available for the asset or liability at the reporting date.

Most common and preferred stocks, commingled public equity funds, real estate securities, foreign exchange contracts, and the Defined Contribution Plan's target date funds, commingled fix income funds, and self-directed brokerage account are valued using prices quoted in active markets for those securities and are categorized as Level 1.

They are marked to market daily with changes in fair value recognized as part of investments and investment income. Most fixed income securities are valued using a matrix pricing technique and are categorized as Level 2.

Matrix pricing is used to value securities based on the securities' relationship to benchmark quoted prices and recently printed security specific trading levels. Value add/opportunistic separately managed accounts (SMA) in real estate, certain fixed income securities, and other securities classified in Level 3 reflect prices, which may use several unobservable inputs using assumptions based on market methodologies to determine the fair value of investments.

Certain derivative instruments in the Defined Benefit Plan, such as foreign exchange contracts, interest rate swaps, credit default swaps, and futures, as well as the self-directed brokerage account in the Defined Contribution Plan, are included in other investments in the fair value tables.

At December 31, 2020 and 2019, the Defined Benefit Plan's investments measured at fair value are shown in the following tables:

Defined Benefit Plan Investments Measured at Fair Value (2020)

($ thousands)

	Fair Value	Level 1	Level 2	Level 3
Fixed Income				
Government	$4,460,194	$—	$4,460,194	$—
Corporates	2,109,867	—	2,089,340	20,527
Asset- and mortgage-backed securities	1,895,050	—	1,892,288	2,762
Private placements	631,220	—	620,240	10,980
Sovereign debt	339,579	—	339,579	—
Agencies	102,230	—	102,230	—
Total fixed income	**9,538,140**	**—**	**9,503,871**	**34,269**
Equity				
Domestic common and preferred stocks	9,077,428	9,067,022	10,406	—
Commingled public equity funds	5,206,066	5,206,066	—	—
Foreign common and preferred stocks	958,356	958,356	—	—
Total equity	**15,241,850**	**15,231,444**	**10,406**	**—**
Real Estate				
Value add/opportunistic SMA	714,134	—	—	714,134
Real estate securities	269,856	269,856	—	—
Total real estate	**983,990**	**269,856**	**—**	**714,134**
Other investments				
Other investments	3,764	3,486	278	—
Total	**$25,767,744**	**$15,504,786**	**$9,514,555**	**$748,403**

Defined Benefit Plan Investments Measured at Fair Value (2019)

($ thousands)

	Fair Value	Level 1	Level 2	Level 3
Fixed Income				
Government	$2,104,363	$—	$2,104,363	$—
Corporates	827,058	—	803,453	23,605
Asset- and mortgage-backed securities	626,387	—	625,542	845
Private placements	573,206	—	560,237	12,969
Sovereign debt	231,729	—	231,729	—
Agencies	22,680	—	22,680	—
Total fixed income	**4,385,423**	**—**	**4,348,004**	**37,419**
Equity				
Domestic common and preferred stocks	8,578,161	8,570,438	7,723	—
Commingled public equity funds	7,269,266	7,269,266	—	—
Foreign common and preferred stocks	1,425,333	1,425,333	—	—
Total equity	**17,272,760**	**17,265,037**	**7,723**	**—**
Real Estate				
Value add/opportunistic SMA	638,849	—	—	638,849
Real estate securities	280,751	280,751	—	—
Total real estate	**919,600**	**280,751**	**—**	**638,849**
Other investments				
Other investments	3,019	1,839	1,180	—
Total	**$22,580,802**	**$17,547,627**	**$4,356,907**	**$676,268**

At December 31, 2020 and 2019, the Defined Contribution Plan's investments measured at fair value are shown in the following tables:

Defined Contribution Plan Investments Measured at Fair Value (2020)

($ thousands)

	Fair Value	Level 1	Level 2	Level 3
Target date funds				
Target date funds	$31,445	$31,445	$—	$—
Equity				
Commingled public equity funds	2,844	2,844	—	—
Commingled fixed income funds				
Commingled fixed income funds	450	450	—	—
Other investments				
Other investments	41	41	—	—
Total	**$34,780**	**$34,780**	**$—**	**$—**

Defined Contribution Plan Investments Measured at Fair Value (2019)

($ thousands)

	Fair Value	Level 1	Level 2	Level 3
Target date funds				
Target date funds	$7,898	$7,898	$—	$—
Equity				
Commingled public equity funds	808	808	—	—
Commingled fixed income funds				
Commingled fixed income funds	150	150	—	—
Total	**$8,856**	**$8,856**	**$—**	**$—**

In certain circumstances NAV can be used as a practical expedient of fair value to establish the fair value of an investment that does not have a readily determinable fair value.

Private equity limited partnerships are valued at the NAV of SERS' ownership interest in partners' capital, which approximates fair value. NAV is determined by the general partners. Private equity limited partnerships are audited at least annually. Since private equity investments in such partnerships are generally illiquid with holding periods lasting three to 10 years, the value realized by SERS upon disposition may differ from estimated values reflected in the financial statements. SERS' private equity investments on the Statement of Fiduciary Net Position are categorized into the following strategies:

- **Buyouts** are investments in established businesses that are undergoing a fundamental change in operations or strategy.

- **Growth Equity/Venture Capital** consists of private equity investments in late-stage venture, minority growth equity, and small buyout strategies. Venture Capital was an active sub-strategy until 2019 and previously referred to under the Growth Equity and Venture Capital sub-asset class in prior reporting periods.
- **Special Situations** are investments in funds that acquire distressed companies or companies in need of restructuring, funds from the secondary market, and funds providing mezzanine financing.
- **Legacy Private Equity** consists of a consolidation of private equity funds from various sub asset-classes (Buyouts, Growth Equity/Venture Capital, and Special Situations) that were not considered part of SERS core investment strategy. These assets are currently being managed by a third-party administrator which provides day-to-day oversight of operations.
- **Private Credit** are closed-end (drawdown) limited partnership structures, often with a significant contractual cash flow component, with liquidity events in five to 10 years. In 2019 Private Credit was an individual investment type but in 2020 SERS' Private Credit investments were broken out and stated separately using the following strategies:
    - **Direct Lending** are funds that will lend money to privately held firms, often as part of a private equity-leveraged buyout transaction. These loans tend to be predominantly medium-duration, floating rate, and senior in the capital structure.
    - **Diversified Credit** are funds that invest in various credit strategies including specialty lending, niche credit opportunities, mezzanine and other debt securities, credit derivatives, structured credit and structured equity.
    - **Distressed Debt** invest in the credit securities of distressed companies or companies in need of restructuring.

Real estate limited partnerships are valued at the NAV of SERS' ownership percentage in partners' capital. The investment managers use third-party appraisals based on discounted cash flows, recent comparable sales, and current market conditions to arrive at NAV. For SERS' Value Add/Opportunistic Funds and Core/Core Plus, NAV is updated by independent appraisals typically at least every three years by appraisers who meet specific professional qualifications. The appraisal process involves significant judgment and estimating; thus, the value upon sale of an asset may differ from its appraised value.

Because the investments in such partnerships are generally illiquid with holding periods lasting seven to 10 years, the value realized by SERS upon disposition may differ materially from estimated values reflected in the financial statements. The following portions of SERS' real estate investments are valued at NAV:

- **Core/Core Plus** are a long-term investment in high-quality real estate that generates returns primarily from stable income producing properties. These are open-end funds.
- **Value Add/Opportunistic Funds** utilize greater leverage and development strategies relative to core strategies, thereby taking higher risks but demand higher returns. Returns are primarily generated from capital appreciation from opportunistic investments. Strategies for this category of investing can include niche opportunities that are typically not available in core-style investing. These are closed-end funds.
- **Legacy Real Assets** differ from real estate in that they focus on other real assets other than real estate but maintain the characteristics of collateralization by hard assets and income-producing potential. This strategy was referred to as Natural Resources/Infrastructure in 2019.

Hedge funds are valued on a monthly basis by general partners based on information provided by underlying hedge fund investments, third-party administrators, and brokers. Hedge fund investments in limited partnerships are valued using NAV of units held at the end of the period based on the fair value of underlying investments.

Most of the hedge fund investments are being scaled down since they are not part of the current investment strategy. Hedge funds are categorized into the following specific strategies:

- **Opportunistic Fixed Income/Credit-Focused Strategies** are investments that include directional and relative value investments through various structures, excluding closed-end funds, that may include debt securities, credit derivatives and related instruments, and/or multi-sector fixed income funds. This was an active hedge fund strategy in 2020 and 2019, and was referred to as Opportunistic Fixed Income and Credit-Focused Strategies in those years, respectively.

- **Legacy Hedge Funds** includes hedge funds that SERS is no longer actively investing in. In 2019, these investments were further categorized into the following:

    - **Direct Investments** were investments where SERS and other institutional investors pool their funds with a manager tasked with incorporating hedge strategies. The assets are to be sold in an orderly fashion as market conditions dictate.

    - **Absolute Return Strategies** were investments intended to produce uncorrelated diversified return streams in the portfolio to help preserve and enhance the real value of the pension fund over long periods of time. The assets are to be sold in an orderly fashion as market conditions dictate.

    - **Funds-of-Hedge Funds** were investments in funds with investment managers who invest in hedge funds. Funds-of-Hedge Funds provided an additional layer of fiduciary oversight (investment, legal, compliance, and monitoring) with similar all-in fees as direct investments in hedge funds. SERS was the only limited partner and was able to make larger allocations, which lowered fees and improved liquidity terms. The assets are to be sold in an orderly fashion as market conditions dictate.

The Defined Benefit Plan's commingled fixed income funds are pooled investments in multiple debt-type securities, which are valued at NAV. The NAV for commingled fixed income funds is calculated using the closing price of the underlying investments, with the total value of the fund being apportioned to SERS based on units of ownership.

Notes to Basic Financial Statements

December 31, 2020 and 2019

At December 31, 2020 and 2019, the Defined Benefit Plan's investments measured at NAV are shown in the following tables:

Defined Benefit Plan Investments Measured at NAV (2020)

($ thousands)

	NAV	Unfunded Commitments	Redemption Frequency	Redemption Notice Period
Private equity				
Buyouts	$2,716,819	$1,875,768	NA	NA
Growth equity	1,089,168	189,223	NA	NA
Legacy private equity	652,507	123,417	NA	NA
Special situations	503,485	516,171	NA	NA
Diversified credit	291,664	466,499	NA	NA
Direct lending	225,294	346,270	NA	NA
Distressed debt	147,550	148,142	NA	NA
Total private equity	**5,626,487**	**3,665,490**		
Real estate				
Core/core plus	1,034,445	131,759	Quarterly	60 - 90 days
Value add/opportunistic	561,999	444,639	NA	NA
Legacy real assets	5,222	—	Daily	None
Total real estate	**1,601,666**	**576,398**		
Hedge funds				
Opportunistic fixed income	995,196	—	Quarterly	95 days
Legacy hedge funds	24,220	—	See note[1/]	See note[1/]
Total hedge funds	**1,019,416**	**—**		
Commingled fixed income funds				
Commingled fixed income funds	349,692	—	Quarterly	30 days
Total	**$8,597,261**	**$4,241,888**		

[1/]The assets are to be sold in an orderly fashion as market conditions dictate.

Defined Benefit Plan Investments Measured at NAV (2019)

($ thousands)

	NAV	Unfunded Commitments	Redemption Frequency	Redemption Notice Period
Private equity				
Buyouts	$1,981,336	$1,612,770	NA	NA
Venture capital	745,248	291,499	NA	NA
Legacy private equity	745,134	144,465	NA	NA
Special situations	415,681	624,912	NA	NA
Private credit funds	305,651	1,197,282	NA	NA
Total private equity	**4,193,050**	**3,870,928**		
Real estate				
Core/core plus	741,293	366,868	Quarterly	60 - 90 days
Value add/opportunistic funds	447,771	565,896	NA	NA
Natural resources/infrastructure	5,743	—	Daily	None
Total real estate	**1,194,807**	**932,764**		
Hedge funds				
Credit-focused strategies	969,849	—	Quarterly	95 days
Absolute return strategies	27,437	—	See note[1/]	See note[1/]
Funds-of-hedge funds	5,707	—	See note[1/]	See note[1/]
Direct investments	2,425	—	See note[1/]	See note[1/]
Total hedge funds	**1,005,418**	**—**		
Commingled fixed income funds				
Commingled fixed income funds	559,587	—	Quarterly	30 days
Total	**$6,952,862**	**$4,803,692**		

[1/]The assets are to be sold in an orderly fashion as market conditions dictate.

SERS also has investments that are valued using methods other than fair value or NAV. SERS owns a portion of the commonwealth Treasury Department's short-term investment fund (STIF). SERS' portion of STIF is valued at amortized cost. Additionally, SERS has other investments that are carried at cost.

At December 31, 2020 and 2019, the Defined Benefit and Defined Contribution Plans' investments not measured at fair value or NAV are shown in the following tables:

Investments Not Measured at Fair Value or NAV

($ thousands)

Defined Benefit Plan

	2020	2019
Short-term investments	$1,838,986	$1,661,979
Fixed income	5,718	1,484
Equity	1,396	207
Other investment	1	2
Total	**$1,846,101**	**$1,663,672**

Notes to Basic Financial Statements

December 31, 2020 and 2019

Investments Not Measured at Fair Value or NAV

($ thousands)

Defined Contribution Plan

	2020	2019
Short-term investments	$6,432	$4,434
Total	**$6,432**	**$4,434**

SERS' investment office, in consultation with the board and its investment consultants, updates the SERS strategic investment plan periodically.

In April 2018, the board approved the SERS *2018-2019 Investment Plan* and a 10-year asset allocation strategy. The target asset allocation was based on a 7.25% assumed investment rate of return and was in place during 2019. The following table shows the target asset allocations under that plan:

Target Asset Allocation (2019)

Asset Class	Long-Term 10-Year Strategic Target
Private Equity	16%
Global Public Equity	48
Real Estate	12
Multi-Strategy	10
Fixed Income	11
Cash	3
Total	**100%**

The investment return experience is reviewed annually and as a part of the normal five-year experience study cycle. As a result of the review undertaken during June of 2019 and recognition of a changing market environment and a desire to provide an opportunity to reduce risk while maintaining the potential for achieving a reasonable long-term assumed investment rate of return, the board approved a reduction in the annual investment return assumption from 7.25% to 7.125%.

In December 2019, the board approved the *SERS Defined Benefit Plan Investment Policy Statement* and a 10-year asset allocation strategy designed to further mitigate risk, reduce external management fees, and increase fund liquidity while meeting the Defined Benefits Plan's long term return assumption. The asset allocation targets increased exposure to liquid, fixed income-oriented investments while simultaneously reducing exposure to less liquid non-traditional strategies. Assets were managed according to this plan with a long term objective of achieving and maintaining a fully funded status in the Defined Benefit Plan. This plan was in place during 2020. The following table shows the target asset allocations under that plan:

Target Asset Allocation (2020)

Asset Class	Long-Term 10-Year Strategic Target
Private Equity	14%
Private Credit	4
Real Estate	8
U.S. Equity	25
International Developed Markets Equity	13
Emerging Markets Equity	4
Fixed Income[1/]	26
Inflation Protection (TIPS)	4
Cash	2
Total	**100%**

[1/]22% target to Core Fixed Income, 4% target to Opportunistic Fixed Income.

In July 2020, the board further reduced the investment return assumption from 7.125% to 7.0%. This change became effective with the December 31, 2020 actuarial valuation. Additionally, in December 2020, the SERS Board amended the *SERS Defined Benefit Plan Investment Policy Statement*. The newly adopted policy redefines the fixed income allocations within the portfolio moving towards a liability-driven or cash flow-driven investment strategy.

For the years ended December 31, 2020 and 2019, the money weighted rate of return for SERS' Defined Benefit Plan, net of manager fees, was 11.3% and 18.8% respectively. A money weighted rate of return expresses investment performance,

net of manager fees, adjusted for the changing amounts actually invested.

SERS' investments are subject to various risks. Among these risks are concentration of credit risk, custodial credit risk, credit risk, interest rate risk, and foreign currency risk.

Concentration of credit risk is the risk of loss attributed to the magnitude of investment in a single issuer. As of December 31, 2020 and 2019, SERS had no single issuer that exceeded 5% of total investments. Investments issued or explicitly guaranteed by the U.S. government and investments in mutual funds, external investment pools, and other pooled investments were excluded.

Custodial credit risk for investments is the risk that, in the event of the failure of the counterparty to a transaction, SERS would be unable to recover the value of investment or collateral securities that are in the possession of an outside party. Pursuant to the retirement code (71 Pa. C.S. §5931(c)), the State Treasurer serves as custodian of the Defined Benefit Plan. In accordance with a contractual relationship between the commonwealth's Treasury Department and its custodial agent, substantially all investments, where securities are used as evidence of the investment, are held by the custodian in book-entry form in SERS' name.

Those investments are defined as insured or registered investments for which the securities are held by SERS or its agent and, therefore, have a very minimal level of custodial credit risk losses. All remaining investments do not have securities that are used as evidence of the investments. These investments are primarily in commingled funds, hedge funds, and limited partnerships, which include real estate and private equity.

Credit risk is the risk that an issuer or other counterparty to an investment will not fulfill its obligations. The credit risk of a debt instrument is measured by nationally recognized statistical rating agencies such as Moody's Investors Services (Moody's), Standard and Poor's (S&P), and Fitch Ratings (Fitch).

For Defined Benefit Plan fixed income and short term investment holdings exposed to credit risk, the following tables disclose aggregate fair value, by the least favorable credit rating issued using Moody's, S&P, and Fitch credit ratings at December 31, 2020 and 2019 by debt sector.

Notes to Basic Financial Statements

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Debt Securities Exposed to Credit Risk (2020)

($ thousands)

	AAA	AA	A	BAA	BA and below	NA[1/]	Short-Term Investments[2/]	Total Exposed to Credit Risk[3/]
Corporates	$86,946	$114,991	$630,535	$1,094,872	$180,687	$7,601	$—	$2,115,632
Short-term investments[2/]	—	—	—	—	—	—	1,838,939	1,838,939
Asset- and mortgage-backed securities	314,208	1,279,776	10,038	6,151	154,508	2,783	—	1,767,464
Private placements[4/]	26,790	23,424	36,578	205,922	272,549	65,957	—	631,220
Sovereign debt	35,673	79,015	32,509	137,473	274,578	5,391	—	564,639
Agencies	16,088	86,142	—	—	—	—	—	102,230
Government	969	31,166	13,904	14,239	—	—	—	60,278
Total	**$480,674**	**$1,614,514**	**$723,564**	**$1,458,657**	**$882,322**	**$81,732**	**$1,838,939**	**$7,080,402**

Debt Securities Exposed to Credit Risk (2019)

($ thousands)

	AAA	AA	A	BAA	BA and below	NA[1/]	Short-Term Investments[2/]	Total Exposed to Credit Risk[3/]
Short-term investments[2/]	$—	$—	$—	$—	$—	$—	$1,661,824	$1,661,824
Asset- and mortgage-backed securities	121,181	387,322	15,086	1,516	373,151	3,736	—	901,992
Corporates	16,395	36,839	228,939	396,741	141,846	6,298	—	827,058
Private placements[4/]	19,700	21,006	40,864	169,670	267,403	56,202	—	574,845
Sovereign debt	17,017	51,621	21,002	84,694	267,227	3,378	—	444,939
Government	173	12,816	2,292	7,888	170	—	—	23,339
Agencies	9,222	13,458	—	—	—	—	—	22,680
Total	**$183,688**	**$523,062**	**$308,183**	**$660,509**	**$1,049,797**	**$69,614**	**$1,661,824**	**$4,456,677**

[1/]Represents other securities that were either not rated or had a withdrawn rating.

[2/]Represents short-term investments mostly in the commonwealth Treasury Department's STIF, which is not rated. This category comprises short-term, investment grade securities, which are mainly U.S. treasuries, agencies, or repurchase agreements.

[3/]Debt securities exposed to credit risk and U.S. government guaranteed securities, as noted in the subsequent paragraph, comprised short-term investments, commingled fixed income funds, and fixed income from the Statements of Fiduciary Net Position.

[4/]Private placements raise capital via offerings directly to qualified investors rather than through public offerings. Private placements do not have to register with the Securities and Exchange Commission if the securities are purchased for investment as opposed to resale. These private placements have exposure to various fixed income securities.

U.S. government guaranteed securities with a fair value of $4.7 billion and $2.1 billion as of December 31, 2020 and 2019, respectively, are not included in the previous tables because they are not subject to credit risk.

The Defined Contribution Plan is exposed to credit risk through investment in the commonwealth Treasury Department's STIF, which is not rated. The plan had $6.4 million and $4.4 million in STIF as of December 31, 2020 and 2019, respectively. The plan also has indirect exposure to credit risk through the commingled fixed income funds, which had a cumulative balance of $450,000 and $150,000 as of December 31, 2020 and 2019, respectively. These funds hold investment grade securities.

Interest rate risk is the risk that interest rate changes will adversely affect the fair value of an investment. As a means for limiting SERS' exposure to fair value losses arising from rising interest rates, SERS' long-term asset allocation policy diversifies its fixed income core segment between intermediate duration and longer duration strategies based on the Bloomberg Barclays U.S. Aggregate Bond Index. Duration is a measure of an investment's sensitivity to changes in interest rates. The higher the duration, the greater the changes in fair value when interest rates change. SERS measures interest rate risk using option adjusted duration, which considers the effect of a security's embedded options on cash flows.

At December 31, 2020 and 2019, SERS' Defined Benefit Plan had the following option-adjusted durations by debt sector:

Debt Option-Adjusted Durations

($ thousands)

	2020		2019	
	Fair Value	Option-Adjusted Duration	Fair Value	Option-Adjusted Duration
Sovereign debt	$339,579	8.9	$231,729	9.0
Government	4,460,194	8.4	2,104,363	7.4
Corporates	2,115,632	8.1	827,058	6.4
Private placements[1/]	631,220	5.3	574,845	4.4
Agencies	102,230	4.4	22,680	6.7
Commingled investment funds	349,692	3.0	559,587	3.5
Asset- and mortgage-backed securities	1,895,050	2.9	626,387	3.1
Short-term investments - (STIF)	1,402,198	0.1	1,623,574	0.1
Short-term investments	436,741	0.0	38,250	0.0
Total[2/]	**$11,732,536**		**$6,608,473**	

[1/]Private placements raise capital via offerings directly to qualified investors rather than through public offerings. Private placements do not have to register with the Securities and Exchange Commission if the securities are purchased for investment as opposed to resale. These private placements have exposure to various fixed income securities.

[2/]Total fair values exposed to interest rate risk comprised short-term investments, commingled fixed income funds, and fixed income from the Statements of Fiduciary Net Position.

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The Defined Contribution Plan is exposed to interest rate risk through investment in the commonwealth Treasury Department's STIF, which had a duration of approximately one month at December 31, 2020 and 2019, respectively. The plan also has indirect exposure to interest rate risk through commingled fixed income funds, which have an average duration of approximately 6 years and 5.6 years at December 31, 2020 and 2019, respectively. The cumulative balance of these funds was $450,000 and $150,000 as of December 31, 2020 and 2019 respectively.

Foreign currency risk is the risk that fluctuations in exchange rates will adversely affect the fair value of an investment. As part of SERS' program to manage risk and enhance returns, SERS invests in global markets. At December 31, 2020 and 2019, the SERS Defined Benefit Plan had the following currency exposures:

Foreign Currency Exposures (2020)

($ thousands)

Currency	Short-Term Investments[1/]	Fixed Income	Common and Preferred Stocks	Other Investments	Real Estate	Private Equity	Total
European Euro	$6,742	$24,334	$118,669	$1,399	$325,018	$365,279	$841,441
British Pound Sterling	455	39,713	68,106	32,510	—	—	140,784
Swedish Krona	84	—	6,370	1,391	—	103,553	111,398
Japanese Yen	487	—	64,624	4,087	—	—	69,198
Swiss Franc	5,870	—	52,846	(2,546)	—	—	56,170
South Korean Won	728	—	33,800	12,939	—	—	47,467
Mexican Peso	136	26,342	10,462	3,251	405	—	40,596
Canadian Dollar	202	4,583	29,266	5,234	—	—	39,285
Australian Dollar	350	16,742	29,362	(7,350)	—	—	39,104
Hong Kong Dollar	54	—	34,683	—	—	—	34,737
New Taiwan Dollar	352	—	30,557	—	—	—	30,909
Danish Krone	1,542	—	19,039	298	—	—	20,879
Norwegian Krone	350	695	6,246	7,555	—	—	14,846
Brazilian Real	1,346	6,798	—	3,443	—	—	11,587
Indonesian Rupiah	160	7,466	3,744	—	—	—	11,370
Chilean Peso	—	—	—	11,174	—	—	11,174
Colombian Peso	235	9,424	—	1,387	—	—	11,046
Russian Ruble	(670)	2,458	—	9,038	—	—	10,826
Hungarian Forint	—	—	1,268	8,231	—	—	9,499
Malaysian Ringgit	79	9,156	—	—	—	—	9,235
Polish Zloty	150	2,538	1,721	4,606	—	—	9,015
Czech Koruna	5	—	—	8,536	—	—	8,541
Other currencies (8)	1,250	9,365	16,010	(1,330)	—	—	25,295
Total	**$19,907**	**$159,614**	**$526,773**	**$103,853**	**$325,423**	**$468,832**	**$1,604,402**

[1/]Includes receivables and payables as of December 31 for securities sold and purchased.

Foreign Currency Exposures (2019)

($ thousands)

Currency	Short-Term Investments[1/]	Fixed Income	Common and Preferred Stocks	Other Investments	Real Estate	Private Equity	Total
European Euro	$9,780	$27,673	$260,145	($7,580)	$196,417	$197,863	$684,298
British Pound Sterling	370	36,123	194,129	31,866	—	—	262,488
Swiss Franc	6,721	—	120,476	(5,084)	—	—	122,113
Japanese Yen	528	—	109,035	3,749	—	—	113,312
Australian Dollar	54	12,099	72,185	9,669	—	—	94,007
Swedish Krona	(3)	—	17,613	11,315	—	63,413	92,338
Hong Kong Dollar	53	—	64,651	—	—	—	64,704
South Korean Won	1,229	—	44,417	11,976	—	—	57,622
Canadian Dollar	177	4,692	52,481	(1,858)	—	—	55,492
Danish Krone	1,340	—	50,993	273	—	—	52,606
Mexican Peso	173	25,442	21,466	(1,967)	461	—	45,575
Norwegian Krone	89	—	18,504	10,393	—	—	28,986
Indonesian Rupiah	175	7,746	17,826	1,868	—	—	27,615
New Taiwan Dollar	17	—	23,916	—	—	—	23,933
Chilean Peso	—	—	—	13,662	—	—	13,662
New Zealand Dollar	80	—	4,118	8,518	—	—	12,716
Polish Zloty	220	8,783	814	1,756	—	—	11,573
Malaysian Ringgit	100	9,786	422	—	—	—	10,308
Brazilian Real	1,141	8,931	—	—	—	—	10,072
Colombian Peso	250	9,170	—	—	—	—	9,420
Thai Baht	7	—	5,355	(4)	—	—	5,358
Turkish Lira	—	—	4,918	—	—	—	4,918
Other currencies (8)	1,648	9,092	7,941	(2,135)	—	—	16,546
Total	**$24,149**	**$159,537**	**$1,091,405**	**$86,417**	**$196,878**	**$261,276**	**$1,819,662**

[1/]Includes receivables and payables as of December 31 for securities sold and purchased.

The Defined Contribution Plan has indirect foreign currency exposure through target date funds and the Global Non-U.S. Stock Index Fund, which is classified as a commingled public equity fund on the Statements of Fiduciary Net Position. Target date funds are diversified across global asset classes, with allocations changing over the funds' investment horizon. The funds include varying degrees of international equity and fixed income as part of their allocations. The Global Non-U.S. Stock Index Fund tracks the performance of the MSCI All Country World Index (ACWI) ex-U.S. index, which is made up of non-U.S. stocks from 22 developed markets and 27 emerging markets.

(5) Securities Lending

In accordance with a contract between the commonwealth's treasurer and its custodian, the SERS Defined Benefit Plan participates in a securities lending program.

The custodian, acting as lending agent, lends the plan's equity, debt, and money market securities for cash, securities, or letter of credit collateral. Collateral is required at 102% of the fair value of the securities loaned except for the equity securities of non-U.S. corporations, for which collateral of 105% is required. Collateral is marked to market daily. If the collateral falls below

guidelines for the fair value of the securities loaned, additional collateral is obtained. Cash collateral is invested by the lending agent in accordance with investment guidelines approved by the board. The lending agent cannot pledge or sell securities collateral unless the borrower defaults.

As of December 31, 2020 and 2019, the Defined Benefit Plan's credit exposure to individual borrowers was limited because the amounts owed to the borrowers exceeded the amounts the borrowers owed the plan. The treasurer's contract with the lending agent requires the agent to indemnify the plan if the borrowers fail to return the underlying securities and the collateral is inadequate to replace the loaned securities or if the borrowers fail to pay income distributions on the loaned securities.

All loaned securities at December 31, 2020 and 2019, could be terminated on demand by either the lending agent or the borrower. Cash collateral is invested in a short-term collective investment pool. The duration of the investments in the pool at December 31, 2020 and 2019 was four days and two days, respectively. Interest rate risk may be posed by mismatched maturities and could be affected by other program features, such as the lending agent's ability to reallocate loaned securities among all of its lending customers.

As of December 31, 2020 and 2019, for the Defined Benefit Plan, the fair value of loaned securities was $680 million and $687 million, respectively; the fair value of the associated collateral was $698 million and $700 million, of which $158 million and $138 million was cash, respectively. As of December 31, 2020 and 2019, noncash collateral of $540 million and $562 million, respectively, was invested in U.S. government guaranteed securities, which are not subject to credit risk.

(6) Derivative and Structured Financial Instruments and Restricted Assets

SERS mitigates its legal risk on investment holdings including derivatives by ensuring that legal requirements, including indemnification, sovereign immunity, jurisdiction, etc., are acknowledged and agreed to in the derivatives agreements to which they are subject.

Within narrowly prescribed guidelines, the SERS Defined Benefit Plan and Defined Contribution Plan permit investment managers to directly enter into certain derivative and structured financial instruments primarily to hedge risk and reduce the volatility of its portfolio. Typically, investment managers enter into foreign exchange contracts to make payment for international investments and to hedge currency risk, futures contracts to manage interest rate risk, forward settling mortgage instruments for liquidity as well as to gain mortgage exposure, and swaps to more efficiently gain investment exposure in the equity and credit markets.

SERS indirectly holds derivatives and financial instruments through commingled fund structures in the Defined Benefit Plan and the Defined Contribution Plan. At a fund level, these managers hold foreign exchange contracts, futures contracts, and certain swap contracts. These funds invest in instruments directly and indirectly to gain foreign exchange exposure and to manage interest rate risk by altering the average life of the portfolio. Derivatives are viewed within the context of the fund's total portfolio and are consistent with the funds' overall strategy.

SERS is exposed to counterparty credit risk on some open derivative positions. Counterparty credit risk is the risk that a derivative counterparty may fail to meet its payment obligation under the derivative contract.

SERS invests in mortgage-backed securities (MBS) in the form of specified pools to maximize yields. These securities are sensitive to prepayments of mortgages, which may result from a drop in interest rates. The system also uses MBS forwards, which are forward-settling mortgage instruments that are used for liquidity as well as a low-cost, efficient way to gain mortgage exposure. The MBS forwards are subject to credit risk in the event of nonperformance by counterparties. The fair value

of MBS forwards are $637 million and $145 million as of December 31, 2020 and 2019, respectively. These investments are included in fixed income in the Statement of Fiduciary Net Position.

Foreign exchange contracts are agreements to exchange the currency of one country for the currency of another country at an agreed-upon price and settlement date. The investment manager uses these contracts primarily for its international investments to settle pending trades that occur more than two business days after trade date. The contracts are used by the investment manager for the purpose of eliminating foreign exchange risk. As a matter of policy, the investment managers enter into these contracts at their full discretion to protect currency fluctuations. To reduce the risk of counterparty nonperformance, the investment managers generally enter into these contracts with institutions regarded as meeting high standards of creditworthiness. The unrealized gain/loss on contracts is included in the net position and represents the fair value of the contracts on December 31.

At December 31, 2020 and 2019, the Defined Benefit Plan directly-owned contracts to purchase and sell by foreign currencies are shown in the following tables:

Foreign Exchange Contracts (2020)

($ thousands)

Currency	Purchases	Unrealized Gain/ (Loss)	Sales	Unrealized Gain/ (Loss)
Japanese Yen	$33,250	$468	$29,164	($318)
British Pound Sterling	32,710	860	200	—
European Euro	19,636	617	18,237	(525)
South Korean Won	12,939	406	—	—
Chilean Peso	11,174	991	—	—
Polish Zloty	9,121	90	4,515	(246)
Russian Ruble	9,038	299	—	—
Czech Koruna	8,536	504	—	—
Hungarian Forint	8,231	220	—	—
Norwegian Krone	7,555	191	—	—
Canadian Dollar	6,728	23	1,493	(37)
Indian Rupee	6,456	120	—	—
Brazilian Real	3,924	227	481	6
Mexican Peso	3,251	235	—	—
Swedish Krona	1,462	39	71	—
Colombian Peso	1,387	87	—	—
Australian Dollar	722	26	8,072	(427)
Turkish Lira	396	27	—	—
Danish Krone	298	9	—	—
South African Rand	—	—	7,532	(431)
Swiss Franc	—	—	2,546	(8)
New Zealand Dollar	—	—	650	(25)
Total	**$176,814**	**$5,439**	**$72,961**	**($2,011)**

Foreign Exchange Contracts (2019)

($ thousands)

Currency	Purchases	Unrealized Gain/ (Loss)	Sales	Unrealized Gain/ (Loss)
British Pound Sterling	$38,601	$944	$6,736	($160)
Chilean Peso	13,662	(116)	—	—
Norwegian Krone	13,105	440	2,711	51
European Euro	13,016	142	20,597	(225)
South Korean Won	11,976	296	—	—
Swedish Krona	11,315	256	—	—
Australian Dollar	10,750	229	1,081	(17)
New Zealand Dollar	8,518	420	—	—
Czech Koruna	3,913	142	—	—
Japanese Yen	3,844	21	95	—
Polish Zloty	3,142	55	1,386	(52)
Russian Ruble	2,646	80	—	—
Indonesian Rupiah	1,868	55	—	—
Mexican Peso	1,041	33	3,008	(92)
Canadian Dollar	597	13	2,455	(34)
Danish Krone	273	3	—	—
South African Rand	—	—	8,694	(567)
Swiss Franc	—	—	5,084	(78)
Thai Baht	—	—	4	—
Total	**$138,267**	**$3,013**	**$51,851**	**($1,174)**

Swap agreements provide for periodic payments between parties based on the change in value of underlying assets, indexes, rates, and credit worthiness. SERS' managers use contracts with multiple counterparties as well as collateral posting requirements to manage its counterparty credit risk. Credit default swaps are agreements with counterparties to either purchase or sell credit protection. SERS' managers use credit default swaps to either increase or decrease credit exposure to certain credit markets. Interest rate swaps are over-the-counter contracts that allow counterparties to exchange a fixed rate liability for a floating rate liability or vice versa. SERS' managers use interest rate swaps as a cost-effective way of gaining exposure to certain sectors of the fixed income market. SERS' direct exposure to swap agreements was not significant at December 31, 2020 and 2019.

Futures are standardized contracts traded on an exchange. Contract details include the price and quantity of a specific asset to be transacted by either the buyer or the seller on a set date. Futures are subject to certain risks which include liquidity, interest rate, market, and credit risks. Futures are used by SERS' managers to gain desired exposures or hedge certain risks within the portfolio. SERS' managers do not use futures for the purpose of speculation. SERS' exposure to futures was not significant at December 31, 2020. SERS' did not have exposure to futures at December 31, 2019.

(7) Other Post-Employment Benefits (OPEB) for Employees of SERS

(a) Plan Description

SERS employees, working in both the Defined Benefit and Defined Contribution Plans, are eligible to participate in the Retired Employees Health

Program (REHP) if they meet certain criteria upon retirement. The REHP is a single employer defined benefit OPEB plan that includes commonwealth agencies and some component units. The REHP is established as a trust equivalent arrangement. The REHP is administered by the Pennsylvania Employees Benefit Trust Fund (PEBTF), which acts as a third-party administrator under an administrative agreement with the commonwealth. The REHP is provided as a part of collective bargaining agreements with most commonwealth labor unions. All policy decisions and types and levels of benefits for the REHP fall under the purview of the commonwealth's Executive Board, and the Secretary of Administration. The REHP does not have a governing board.

Detailed information about the REHP is reported in the commonwealth's Annual Comprehensive Financial Report (ACFR) as an other employee benefit trust fund. The REHP is reported using the economic resources measurement focus and the accrual basis of accounting. The commonwealth's ACFR is an audited financial statement and is available at **www.budget.pa.gov**.

(b) Benefits Provided
Eligible employees who retire from the state and meet one of the following eligibility criteria are eligible to receive REHP benefits:

- 25 or more years of service
- 20 or more years of service and superannuation age – Age 50 for Park Rangers, Capitol Police and certain enforcement officers or 60 for general employees (age 55 or 65 for employees subject to Act 2010-120)
- Disability retirement – requires five years of service (no service requirement for enforcement officers)

Spouses and dependents are eligible for subsidized postemployment medical coverage while the retiree is alive.

The Patient Protection and Affordable Care Act (PPACA), signed into law on March 23, 2010, increased the dependent child age limit to age 26 and applied to the commonwealth effective January 1, 2011.

(c) Contributions
Employer contributions for retiree healthcare benefits are charged as a component of payroll expenditures on a "pay as you go" basis. During 2020 and 2019, SERS funded REHP benefits by paying a set dollar amount per pay period for each active SERS employee.

Retiree contributions ranged from 0% to 3% of final average salary, which varies depending on retirement date. In addition to the retiree contributions for those hired on or after August 1, 2003, non-Medicare retirees who elect the Choice PPO plan are required to pay the incremental cost between the Choice PPO plan and the least expensive plan (LEP) in their county of residence through monthly pension deductions (PPO buy-up). Surviving spouses of deceased retirees may continue to participate in the plan if they pay the full cost of the coverage.

(d) Proportionate Share of OPEB Amounts
The REHP undergoes an actuarial valuation each year and uses a June 30 measurement date.

At December 31, 2020 and 2019, SERS reported a liability of $29.3 million and $23.6 million, respectively, for its proportionate share of the net OPEB liability respectively. SERS' proportion of the net OPEB liability was based on actual contributions made to the REHP. At June 30, 2020 and 2019, SERS proportion was 0.238% and 0.227% respectively.

For the years ended December 31, 2020 and 2019, SERS recognized OPEB expense of $3.5 million and $3.9 million respectively, which is included with administrative expenses.

Notes to Basic Financial Statements
December 31, 2020 and 2019

At December 31, 2020 and 2019, SERS reported deferred outflows of resources and deferred inflows of resources related to OPEB from the following sources:

Schedule of Deferred Outflows and Inflows

($ thousands)

	2020		2019	
	Deferred Outflows of Resources	Deferred Inflows of Resources	Deferred Outflows of Resources	Deferred Inflows of Resources
Changes in assumptions or other inputs as of measurement date	$3,800	$2,270	$755	$3,269
Change in proportionate share and differences between actual and proportionate share employer contributions	3,723	820	2,460	1,119
Contributions subsequent to measurement date	572	—	574	—
Differences between expected and actual experience in total OPEB liability	25	14,054	—	17,555
Net differences between projected and actual earnings on plan investments	11	—	—	42
Total	**$8,131**	**$17,144**	**$3,789**	**$21,985**

(e) Actuarial Assumptions
The total OPEB liability was determined by an actuarial valuation as of June 30, 2020 and 2019. The following actuarial assumptions were used:

- Investment rate of return: 5% in 2020 and 2019
- Inflation: 2.60% in 2020 and 2019
- Projected salary increases: average career salary growth of 2.65% and general salary schedule increases of 2.90%, in 2020 and 2019
- Healthcare cost trend rates: 6.6% for 2020 and 6.0% for 2019, both decreasing to an ultimate rate of 4.1%
- Mortality rate for healthy participants: projected RP-2000 Mortality Tables adjusted for an improvement in certain age ranges and future improvement in life expectancy
- Mortality rate for disabled participants: projected RP-2000 Mortality Tables adjusted for future improvement in life expectancy

Certain applicable assumptions mentioned above are based on SERS' Defined Benefit Plan experience study covering the periods 2011–2015, which was released in March 2016.

The assets of the REHP are managed by the commonwealth's Treasury Department in an investment pool. The REHP investments are made based upon an interagency agreement, dated June 17, 2008, and the prudent investor standard set forth in the commonwealth's fiscal code 72 P.S.§30.1, amendment to the fiscal code, the principles of Prudent Investor Standards.

The long-term expected rate of return on REHP plan investments is determined using a risk premium review. This review compares the current relationship between fixed income and equity and their relationship over long periods of time to come up with an expected rate of return. Other variables considered in the expected rates of return are a reversion to the mean for each asset class. Best estimates of arithmetic real rates of return for each major asset class included in the target asset allocation are summarized in the following table:

Long-Term Expected Real Rate of Return

	2020		2019	
Asset Class	Target Allocation	Long-Term Expected Real Rate of Return	Target Allocation	Long-Term Expected Real Rate of Return
Domestic equity	40%	5.6	47%	5.6%
International equity	27	5.8	20	5.8
Fixed income	23	1.7	25	1.7
Real estate	8	4.6	8	4.6
Cash and cash equivalents	1.5	0.9	—	0.9
Private equity	0.5	10.4	—	—
Total	**100%**		**100%**	

Since REHP has insufficient assets to meet next year's projected benefit payments, the discount rate was based on the index rate for 20-year tax-exempt general obligation municipal bond index rate with an average rating of AA/Aa or higher as of the measurement date. The commonwealth elected to determine the rate using the Bond Buyer 20-Bond General Obligation Index. As of June 30, 2020 and 2019, the discount rate was 2.21% and 3.50%, respectively.

(f) Sensitivity Analysis

Sensitivity of SERS' proportionate share of the net OPEB liability to changes in the discount rate and healthcare cost trend rates of 1% lower or higher is not significant. More detail regarding this at the REHP plan level can be found in the commonwealth's ACFR, which is an audited financial statement and is available at www.budget.pa.gov.

(g) Required Supplementary Information (RSI) for OPEB

The schedules of SERS' proportionate share of the net OPEB liability and SERS' contributions are not significant so the related RSI is not included within these financial statements. More detail regarding this at the REHP plan level can be found in the commonwealth's ACFR, which is an audited financial statement and is available at www.budget.pa.gov.

(8) Litigation and Contingencies

SERS is involved in various individual lawsuits, generally related to benefit payments, which, in the event of an adverse result, could increase estimated actuarial liabilities by approximately $1 billion. Some of the cases involve legal issues that, if extended to the entire membership, may result in significant costs to SERS. If such an event were to occur, the additional costs would be recovered by SERS through adjustments to the employer contribution rate. SERS makes every effort to defend its position in these proceedings.

(9) Net Pension Liability

The components of the net pension liability of participating employers at December 31, 2020 and 2019, were as follows:

Net Pension Liability

($ thousands)

	2020	2019
Total pension liability	$52,253,754	$49,274,314
Plan fiduciary net position	35,027,730	31,096,319
Net pension liability	**$17,226,024**	**$18,177,995**
Plan fiduciary net position as a percentage of the total pension liability	67.0%	63.1%

The total pension liability was determined by an actuarial valuation for financial reporting purposes as of December 31, 2020 and 2019, using some of the following actuarial methods and assumptions:

- Actuarial cost method: entry age
- Investment rate of return (discount rate): 7.0% including inflation for 2020 and 7.125% including inflation for 2019
- Projected salary increases: average of 4.60% with a range of 3.30% to 6.95% including inflation for 2020 and average of 5.60% with a range of 3.70% to 8.90% including inflation for 2019
- Asset valuation method: fair (market) value
- Inflation: 2.50% for 2020 and 2.60% for 2019
- Mortality rate: projected PubG-2010 and PubNS-2010 Mortality Tables for 2020 and projected RP-2000 Mortality Tables for 2019, both adjusted for actual plan experience and future improvement

The assumptions, unless otherwise approved by the board, mentioned above are based on the *19th Investigation of Actuarial Experience* study covering the periods 2015–2019, which was released in July 2020. Some of the 2019 assumptions were based on the prior study, which was released in March 2016. SERS Board has elected to lower the investment rate of return over the past few years. The board lowered the investment rate of return from 7.25% to 7.125% in 2019 and approved a further reduction in 2020 to 7.0%.

The long-term expected real rate of return on pension plan investments is determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates of geometric real rates of return for each major asset class included in the pension plan's target asset allocation in note 4 as of December 31, 2020 (see the discussion of the pension plan's investment policy) are summarized in the following table:

Long-Term Expected Real Rate of Return (2020)

Asset Class	Long-Term Expected Real Rate of Return
Private Equity	6.25%
Private Credit	4.25
Real Estate	5.60
U.S. Equity	4.90
International Developed Markets Equity	4.75
Emerging Markets Equity	5.00
Fixed Income - Core	1.50
Fixed Income - Opportunistic	3.00
Inflation Protection (TIPS)	1.50
Cash	0.25

In 2019, the arithmetic method was used to determine the plan's long-term expected real rate of return. Best estimates of arithmetic real rates of return for each major asset class included in the pension plan's target asset allocation in note 4 as

of December 31, 2019 (see the discussion of the pension plan's investment policy) are summarized in the following table:

Long-Term Expected Real Rate of Return (2019)

Asset Class	Long-Term Expected Real Rate of Return
Private Equity	7.25%
Global Public Equity	5.15
Real Estate	5.26
Multi-Strategy	4.44
Fixed Income	1.26
Cash	0.00

The projection of cash flows used to determine the discount rate assumed that contributions from plan members will be made at the current contribution rates and that contributions from participating employers will be made at actuarially determined rates as set by statute. Based on those assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

The following presents the net pension liability calculated using the discount rate of 7.0% for 2020 and 7.125% for 2019, as well as what the net pension liability would be if it were calculated using a discount rate that is one percentage point lower or one percentage point higher than the current rate:

Sensitivity of the Net Pension Liability to Change in the Discount Rate (2020)

($ thousands)

	1% Decrease to 6.0%	Current Discount Rate of 7.0%	1% Increase to 8.0%
Net pension liability	$22,873,262	$17,226,024	$12,452,051

Sensitivity of the Net Pension Liability to Change in the Discount Rate (2019)

($ thousands)

	1% Decrease to 6.125%	Current Discount Rate of 7.125%	1% Increase to 8.125%
Net pension liability	$23,098,119	$18,177,995	$13,965,787

Required Supplementary Information

December 31, 2020 (unaudited)

Schedule 1
Schedule of Changes in Net Pension Liability and Related Ratios

($ millions)

	2020	2019	2018	2017	2016	2015	2014	2013
Total pension liability								
Service cost	$1,003	$982	$965	$961	$953	$955	$944	$943
Interest	3,458	3,409	3,334	3,262	3,271	3,123	3,042	2,975
Changes of benefit terms	—	—	—	—	—	—	—	—
Differences between expected and actual experience	35	66	167	130	(534)	378	98	(143)
Changes of assumptions	2,041	562	—	—	947	669	—	—
Benefit payments, including refunds of member contributions	(3,557)	(3,513)	(3,395)	(3,304)	(3,228)	(3,081)	(2,946)	(2,844)
Net change in total pension liability	2,980	1,506	1,071	1,049	1,409	2,044	1,138	931
Total pension liability - beginning	49,274	47,768	46,697	45,648	44,239	42,195	41,057	40,126
Total pension liability - ending (a)	**$52,254**	**$49,274**	**$47,768**	**$46,697**	**$45,648**	**$44,239**	**$42,195**	**$41,057**
Plan fiduciary net position								
Contributions - employer	$3,186[1/]	$2,115	$2,049	$1,898	$1,622	$1,360	$1,084	$795
Contributions - member	410	405	394	383	375	372	366	352
Net investment income/(loss)	3,920	5,175	(1,442)	4,066	1,587	88	1,462	3,724
Benefit payments, including refunds of member contributions	(3,557)	(3,513)	(3,395)	(3,304)	(3,228)	(3,081)	(2,946)	(2,844)
Administrative expense	(27)	(23)	(26)	(26)	(23)	(22)	(22)	(22)
Net change in plan fiduciary net position	3,932	4,159	(2,420)	3,017	333	(1,283)	(56)	2,005
Plan fiduciary net position - beginning	31,096	26,937	29,405	26,388	26,055	27,338	27,394	25,389
Cumulative effect of change in accounting principle	NA	NA	(48)	NA	NA	NA	NA	NA
Beginning balance restated	NA	NA	29,357	NA	NA	NA	NA	NA
Plan fiduciary net position - ending (b)	35,028	31,096	26,937	29,405	26,388	26,055	27,338	27,394
Net pension liability - ending (a) - (b)	**$17,226**	**$18,178**	**$20,831**	**$17,292**	**$19,260**	**$18,184**	**$14,857**	**$13,663**
Plan fiduciary net position as a percentage of the total pension liability	67.0%	63.1%	56.4%	63.0%	57.8%	58.9%	64.8%	66.7%
Covered payroll	$6,442	$6,329	$6,179	$5,984	$5,912	$5,972	$5,720	$5,598
Net pension liability as percentage of covered payroll	267.4%	287.2%	337.1%	288.9%	325.8%	304.5%	259.7%	244.1%

[1/]Contributions - employer include the $1.061 billion one-time lump sum payment received from Penn State University. See note 1 for more information.

Schedule 1 is intended to show information for 10 years. Additional years will be displayed as they become available.

See accompanying independent auditors' report.

Required Supplementary Information

December 31, 2020 (unaudited)

Schedule 2
Schedule of Employer Contributions

($ millions)

Year[1/]	Actuarially Determined Contribution (ADC)	Contributions in Relation to the ADC	Contribution Deficiency (Excess)	Covered Payroll	Contributions as a Percentage of Covered Payroll
2020[2/]	$2,164	$3,175[4/]	($1,011)	$6,442	49.29%
2019[2/]	2,106	2,106	—	6,329	33.28
2018[2/]	2,040	2,040	—	6,179	33.02
2017[2/,3/]	1,884	1,884	—	5,984	31.47
2016[3/]	1,614	1,614	—	5,912	27.30
2015[3/]	1,360	1,360	—	5,972	22.78
2014[3/]	1,084	1,084	—	5,720	18.95
2013[3/]	795	795	—	5,598	14.20
2012[3/]	566	566	—	5,539	10.22
2011[3/]	392	392	—	5,582	7.02

[1/]The rates used in developing the ADC in the above schedule of contributions are calculated as of December 31, two years prior to the first half, January 1 – June 30, of the year in which contributions are reported and one year prior to the second half, July 1 – December 31, of the year in which contributions are reported. The following funding valuation actuarial methods and assumptions were used to determine contribution rates reported in this schedule as of the December 31 annual funding valuations:

- Actuarial cost method: variation of entry-age cost method (all years)
- Asset valuation method: five-year smoothing (all years)
- Inflation: 2.75% from valuation years 2011 - 2015, 2.6% from valuation years 2016 - 2019, and 2.5% for valuation year 2020
- Projected average salary increases: 6.2% from valuation years 2011 - 2012, 6.1% from valuation years 2013 - 2014, 5.7% for valuation year 2015, 5.6% from valuation years 2016 - 2019, and 4.6% for valuation year 2020
- Assumed investment rate of return (net of manager fees including inflation): 7.5% from valuation years 2011 - 2015, 7.25% from valuation years 2016 – 2018, 7.125% for valuation year 2019, and 7.0% for valuation year 2020

[2/]ADC excludes multiple service transfers made to SERS. These transfers are included as contributions on the Statements of Changes in Fiduciary Net Position.

[3/]The ADC disclosed above is based on minimum floor rates or suppressed rates resulting from collars that were required based on statutory law. These rates were determined by SERS actuary during the annual funding valuation and include an adjustment to the "preliminary employer contribution rate" calculated before the minimum floor or collars were applied. These "final employer contribution rates" fell within the realm of an appropriate ADC calculation under actuarial standards of practice and temporarily deferred a portion of the payments that work towards fully funding the plan.

[4/]Contributions include the $1.061 billion one-time lump sum payment received from Penn State University, less credits utilized during the year. See note 1 for more information.

Schedule 3
Schedule of Investment Returns

	2020	2019	2018	2017	2016	2015	2014	2013
Annual money-weighted rate of return, net of investment expense	11.3%	18.8%	-4.5%	15.1%	6.4%	0.4%	6.4%	13.6%

Schedule 3 is intended to show information for 10 years. Additional years will be displayed as they become available.

See accompanying independent auditors' report.

Supplementary Information

December 31, 2020

Schedule 4
Schedule of Administrative Expenses

($ thousands)

	Defined Benefit Plan	Defined Contribution Plan	Total
Personnel services			
Salaries	$10,618	$1,540	$12,158
Benefits	8,088	514	8,602
Temporary personnel wages, overtime, and out-service training	168	12	180
Total personnel services	**18,874**	**2,066**	**20,940**
Professional services			
Information technology services	4,325	268	4,593
Treasury department services	1,271	45	1,316
Commonwealth services	879	82	961
Consultant fees	631	97	728
Third-party administrator expenses	—	636	636
Legal fees	72	12	84
Total professional services	**7,178**	**1,140**	**8,318**
Rentals			
Real estate rent	1,592	115	1,707
Other equipment rental	126	—	126
Total rentals	**1,718**	**115**	**1,833**
Communication			
Telephone	387	59	446
Postage	273	57	330
Printing and advertising	103	7	110
Total communication	**763**	**123**	**886**
Other expenses			
Maintenance	1,177	1	1,178
EDP and office equipment	816	—	816
Supplies	295	1	296
Subscriptions and memberships	98	—	98
Travel and conferences	14	—	14
Total other expenses	**2,400**	**2**	**2,402**
Total administrative expenses before OPEB expense	30,933	3,446	34,379
OPEB expense	(3,711)	214	(3,497)
Total administrative expenses	**$27,222**	**$3,660**	**$30,882**

See accompanying independent auditors' report.

Supplementary Information

December 31, 2020

Schedule 5
Summary of Investment and Consultant Expenses

($ thousands)

Investment Expenses

Expense Category	Expenses
Defined Benefit Plan manager investment expenses	
Private Equity	$64,109
Private Credit	12,604
Real Estate	26,006
U.S. Equity	3,798
International Developed Markets Equity	12,080
Emerging Markets Equity	9,053
Fixed Income	16,913
Inflation Protection (TIPS)	1,274
Legacy Hedge Funds	52
Total Defined Benefit Plan manager investment expenses	**145,889**
Investment professional personnel	4,144
Investment consultants	3,572
Custodian	1,403
Subscriptions and memberships	285
Operational	68
Total Defined Benefit Plan investment expenses	**155,361**
Defined Contribution Plan investment expenses	12
Total investment expenses	**$155,373**

Consultant Expenses

Firm	Service Type	Expenses
Defined Benefit Plan investment consultant expenses		
StepStone Group	Private equity investments	$1,951
NEPC	Real estate investments	527
Fairview Capital Partners	Investment portfolio management	451
Callan	General investments	400
Other	Other	243
Total Defined Benefit Plan investment consultant expenses		**3,572**
Defined Benefit Plan administrative consultant expenses		
Korn Ferry Hay Group	Actuary	583
Other	Multiple	48
Total Defined Benefit Plan administrative consultant expenses		**631**
Defined Contribution Plan consultant expenses	Multiple	97
Total consultant expenses		**$4,300**

See accompanying independent auditors' report.

Investment Section

pennsylvania
STATE EMPLOYEES' RETIREMENT SYSTEM

May 28, 2021

State Employees' Retirement Board and Executive Director
State Employees' Retirement System
30 North Third Street, Suite 150
Harrisburg, Pennsylvania 17101

On behalf of the Pennsylvania State Employees' Retirement System's (SERS) investment office, I am pleased to present the investment section of the SERS Annual Comprehensive Financial Report for calendar year 2020. The SERS Board administers a Defined Benefit Plan with approximately $35.0 billion in net assets, a Defined Contribution Plan with approximately $40.5 million in net assets, and a voluntary Deferred Compensation Plan offered to members with approximately $4.4 billion in net assets.

SERS' Defined Benefit Plan investment performance for the calendar year ended December 31, 2020, was 11.1%, net of investment management fees. This compares to a 2019 calendar year return of 18.8% net of investment management fees. While year-to-year returns are important, as long-term investors, a longer time horizon is a more appropriate view of SERS' returns. The end of 2020 marks 10-, 15-, 20-, and 25-year periods of returns of 8.0%, 6.5%, 6.4%, and 7.9% (net of fees), respectively. Performance is calculated using a Modified Dietz return methodology.

SERS' funded status as a percentage of total pension liability was approximately 59.4% (actuarial value), as of December 31, 2020. SERS' Board considers its funded status in selecting its risk tolerance, and as such SERS prioritizes an asset allocation to meet the long-term actuarial assumed rate of return, while maintaining an allocation to address the shorter-term liquidity needs of its members.

SERS' investment decisions revolve around one concept: paying the monthly benefit payments. That is why this money exists. To that end, there were notable accomplishments in 2020. In the first half of 2020, an increase in the fixed income allocation was implemented. In the latter half of 2020, the fixed income portfolio was adjusted to better reflect the cash flow needs of the system. Together, these moves better aligned the output from the portfolio with the needs of the monthly benefit payments. In short, we solidified the benefit payments today and in the future.

In addition to securing the benefit, the SERS' Investment Staff, Investment Consultants, Investment Committee, and board accomplished the following in 2020.

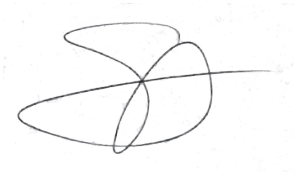
- Maintained low annual Defined Benefit Plan investment manager fees and expenses paid to external firms of 47.2 basis points.

- Committed $874.0 million to best-in-class private market funds, which included expanding the private equity co-investment program by $400 million to access private equity strategies at lower fees.

- Successfully transitioned to a remote work environment. Continuing this environment will create on-going change in the way travel is used and the Investment Office's physical space requirements. Ideally both of those efforts will lead to cost reduction.

The investment section of this report provides further information regarding the investment program. SERS' Board and executive leadership is focused on ensuring the activities in the portfolio are aimed at accomplishing the mission; that being, retirement security for commonwealth employees. For this reason I am confident that SERS will continue on the path of financial improvement for the well-being of the member and retiree.

Sincerely,



Seth A. Kelly
Chief Investment Officer

30 NORTH 3RD STREET, SUITE 150 | HARRISBURG, PA 17101-1716
P: 1.800.633.5461 | F: 717.237.0346 | www.SERS.pa.gov

Investment Policy

The SERS Board originally adopted a formal *Statement of Investment Policy* in 1979. It has been revised periodically to reflect and incorporate legislative changes governing investments and amendments to policies and procedures guiding the investment of the defined benefit portfolio. The information presented in the Investment Section of the 2020 ACFR references the *Commonwealth of Pennsylvania State Employees' Retirement Board Defined Benefit Plan Investment Policy Statement* (IPS) Adopted December 4, 2019, as this was the governing policy in place during the 2020 reporting period.

The purpose of the IPS is to formalize the board's investment objectives and policies, and to define the duties and responsibilities of the various individuals and entities involved in the investment process.

The major elements of the IPS are:

- The assets of the SERS Fund will be managed with the primary objectives of the payment of benefit obligations to participants in the plans as well as to maximize return with acceptable risk considerations and sufficient liquidity so that employer contributions can be minimized.

- The SERS Fund's overall investment objective is to provide a total rate of return, over full economic cycles, which achieves SERS' long-term actuarially assumed rate of return consistent with the board's tolerance for risk.

- The board's investment authority is governed by the prudent investor standard as set forth in Title 71, Pennsylvania Consolidated Statutes, Section 5931(a).

- The members of the board, employees of the board, and agents thereof shall stand in a fiduciary relationship to the members of the system regarding the investments and disbursements of any of the moneys of the fund and shall not profit either directly or indirectly with respect thereto.

- The board employs an investment staff which is responsible to the board to review and analyze the current investment climate, and to recommend adjustments with respect to the policy that are appropriate to take optimum advantage of new conditions and strategies as they arise in the market place. The staff also reviews and analyzes the philosophies, policies, and strategies employed by the investment managers, evaluating the appropriateness of their decision–making processes and their investment styles in relation to present and projected investment horizons.

- The board continually seeks to employ investment managers that possess superior capabilities in the management of assets of public retirement systems. Each manager has full discretion to carry out its investment mandate subject to the investment strategy statement contained in the investment management agreement and will be expected to conduct business on behalf of SERS in accordance with the mandate for which they were retained.

- SERS will employ investment consultants, who act as fiduciaries to the fund, and who will provide investment consulting services in their respective areas of expertise.

- Where investment characteristics are equivalent, the policy will favor investments that will have a positive impact on the economy of the Commonwealth of Pennsylvania.

- A 10-year asset allocation strategy was designed to further mitigate risk, reduce external management fees, improve fund liquidity with increased exposure to fixed income-oriented investments and simultaneously reduce exposure to less liquid non-traditional strategies, while meeting its long-term return assumption.

Investment Policy and Objectives

December 31, 2020 (unaudited)

Investment Objectives

As indicated in SERS' IPS, the objectives of the SERS Fund are to provide benefit payments to participants and beneficiaries at the lowest cost to the commonwealth and to fund the program through a carefully planned and executed investment program.

Consistent with achieving these objectives, the board has established the following goals relative to investment performance:

- Achieve SERS' target rate of return over the long-term, net of fees
- Achieve a SERS' total fund policy benchmark return over 10-year periods, net of fees. The fund policy benchmark index will be based on the asset allocation set forth in the IPS approved by the board

SERS' investment process requires a thorough analysis of the plan liabilities, liquidity requirements, and market opportunities. The board, in collaboration with the Chief Investment Officer, actuarial consultant, and general investment consultant, establishes a target rate of return. Achieving, or exceeding this target rate of return is the primary investment performance objective of SERS' Investment Office to help meet the desired funded status.

In December 2020, the SERS Board adopted a revised *SERS' Defined Benefit Plan and Investment Policy Statement*. The newly adopted IPS redefines the fixed income allocations within the portfolio moving towards a liability-driven or cash flow-driven investment strategy.

Investment Returns

December 31, 2020 (unaudited)

Calendar Year, Net-of-Fees Returns[1/]

For the period ending December 31, 2020

Asset Class	1-Year Total Return	3-Year Total Return	5-Year Total Return	10-Year Total Return
Private Equity[2/,5/]	18.4%	13.2%	11.8%	11.5%
Burgiss All Private Equity Custom Index[3/,5/]	*13.1*	*12.3*	*12.2*	*12.7*
Global Equity +3%[4/,5/]	*15.6*	*14.2*	*16.5*	*16.5*
Private Credit[5/,8/]	9.1	9.7	NA	NA
S&P Lvrd Loan Index +1%[5/]	*2.3*	*4.2*	*5.1*	*5.3*
Real Estate[5/]	2.1	3.4	3.1	7.0
Real Estate Custom Benchmark[5/,6/]	*0.3*	*4.0*	*5.5*	*9.0*
Consumer Price Index +3%[5/]	*4.4*	*4.8*	*4.8*	*4.8*
U.S. Equity	21.3	13.5	14.4	13.3
Russell 3000 Index	*20.9*	*14.5*	*15.4*	*13.8*
International Developed Markets Equity	9.6	5.0	8.8	6.5
MSCI World ex U.S. IMI	*8.3*	*4.3*	*7.9*	*5.4*
Emerging Markets Equity	24.5	8.3	14.7	4.0
MSCI Emerging Markets IMI	*18.4*	*5.8*	*12.2*	*3.5*
Fixed Income	5.8	4.7	4.9	4.2
Bloomberg Barclays U.S. Aggregate Bond Index	*7.5*	*5.3*	*4.4*	*3.8*
Inflation Protection (TIPS)	11.0	5.7	5.2	3.1
U.S. TIPS Index	*11.0*	*5.9*	*5.1*	*3.8*
Cash	0.6	1.7	1.4	0.9
ICE BofAML U.S. 3-Month Treasury Bill Index	*0.7*	*1.6*	*1.2*	*0.6*
Total Fund[7/]	**11.1%**	**8.0%**	**9.1%**	**8.0%**
Total Fund Custom Benchmark	***13.5%***	***9.1%***	***9.7%***	***8.8%***
Total Fund Custom Public Market Equivalent Benchmark	***13.2%***	***9.2%***	***10.4%***	***9.1%***
Total Fund 60/40 Index	***13.6%***	***8.4%***	***9.3%***	***7.2%***

[1/]Returns for periods greater than one year are annualized. Performance was calculated using the Modified Dietz day-weighted return methodology.

[2/]Historical Private Equity performance includes Buyouts, Special Situations, and Growth Equity.

[3/]Intended to compare the program's performance to its peers.

[4/]Long-term benchmark by which SERS measures its private market performance. Shorter term variances (1-year and 3-year) can be pronounced due to the nature of private assets and are not as relevant for benchmark purposes.

[5/]Private Equity, Private Credit, Real Estate and the corresponding benchmarks are reported on a quarter-lagged basis.

[6/]Calculated monthly using beginning of the month asset class weights applied to each corresponding primary benchmark return. The real estate custom benchmark consists of the NCREIF ODCE Index (1 Qtr lag) and FTSE NAREIT Index (unlagged).

[7/]Legacy Hedge Funds are in liquidation, values and performance are no longer reported. However, all performance activity continues to be reflected in SERS' Total Fund return.

[8/]Private Credit has an inception date of December 1, 2017. As of December 31, 2020, extended period returns beyond three years are unavailable.

Investment Returns

December 31, 2020 (unaudited)

Fiscal Year, Net-of-Fees Returns[1/]

For the period ending June 30, 2020

Asset Class	1-Year Total Return	3-Year Total Return	5-Year Total Return	10-Year Total Return
Private Equity[2/,5/]	-2.5%	7.5%	7.5%	9.7%
Burgiss All Private Equity Custom Index[3/,5/]	*1.4*	*9.7*	*9.7*	*11.8*
Global Equity +3%[4/,5/]	*-6.0*	*7.3*	*9.0*	*13.5*
Private Credit[5/,8/]	1.5	NA	NA	NA
S&P Lvrd Loan Index +1%[5/]	*-8.0*	*0.3*	*2.2*	*4.1*
Real Estate[5/]	1.6	2.3	3.1	7.0
Real Estate Custom Benchmark[5/,6/]	*2.6*	*5.0*	*6.5*	*10.0*
Consumer Price Index +3%[5/]	*4.5*	*4.9*	*4.8*	*4.7*
U.S. Equity	4.5	8.5	8.4	13.1
Russell 3000 Index	*6.5*	*10.0*	*10.0*	*13.7*
International Developed Markets Equity	-4.5	1.0	2.7	6.5
MSCI World ex U.S. IMI	*-5.1*	*0.8*	*2.2*	*5.7*
Emerging Markets Equity	1.5	3.4	4.6	3.4
MSCI Emerging Markets IMI	*-4.0*	*1.4*	*2.4*	*3.1*
Fixed Income	4.1	3.9	3.4	4.5
Bloomberg Barclays U.S. Aggregate Bond Index	*8.7*	*5.3*	*4.3*	*3.8*
Inflation Protection (TIPS)	8.0	5.0	3.7	2.8
U.S. TIPS Index	*8.3*	*5.1*	*3.8*	*3.5*
Cash	1.6	1.9	1.5	0.9
ICE BofAML U.S. 3-Month Treasury Bill Index	*1.6*	*1.8*	*1.2*	*0.6*
Total Fund[7/]	**1.2%**	**5.1%**	**5.3%**	**7.5%**
Total Fund Custom Benchmark	***3.8%***	***6.3%***	***6.4%***	***8.4%***
Total Fund Custom Public Market Equivalent Benchmark	***3.8%***	***6.5%***	***6.5%***	***8.7%***
Total Fund 60/40 Index	***4.8%***	***5.8%***	***5.7%***	***7.2%***

[1/]Returns for periods greater than one year are annualized. Performance was calculated using the Modified Dietz day-weighted return methodology.

[2/]Historical Private Equity performance includes Buyouts, Special Situations, and Growth Equity.

[3/]Intended to compare the program's performance to its peers.

[4/]Long-term benchmark by which SERS measures its private market performance. Shorter term variances (1-year and 3-year) can be pronounced due to the nature of private assets and are not as relevant for benchmark purposes.

[5/]Private Equity, Private Credit, Real Estate and the corresponding benchmarks are reported on a quarter-lagged basis.

[6/]Calculated monthly using beginning of the month asset class weights applied to each corresponding primary benchmark return. The real estate custom benchmark consists of the NCREIF ODCE Index (1 Qtr lag) and FTSE NAREIT Index (unlagged).

[7/]Legacy Hedge Funds are in liquidation, values and performance are no longer reported. However, all performance activity continues to be reflected in SERS' Total Fund return.

[8/]Private Credit has an inception date of December 1, 2017. As of June 30, 2020, extended period returns beyond one year are unavailable.

Defined Benefit Plan Values and Annual Return

December 31, 2020 (unaudited)

Defined Benefit Plan Values and Annual Return

($ millions)

Year Ended	Pension Fund Fair Value	Annual Total Pension Fund Rate of Return[1/]
1991	$11,940	22.6%
1992	12,453	7.4
1993	13,701	13.2
1994	13,330	-1.1
1995	16,343	25.2
1996	18,492	15.4
1997	21,312	18.5
1998	24,123	16.3
1999	28,093	19.9
2000	27,880	2.2
2001	24,706	-7.9
2002	20,880	-10.9
2003	24,536	24.3
2004	26,641	15.1
2005	28,752	14.5
2006	32,053	16.4
2007	35,516	17.2
2008	22,796	-28.7
2009	24,662	9.1
2010	25,886	11.9
2011	24,377	2.7
2012	25,389	12.0
2013	27,394	13.6
2014	27,338	6.4
2015	26,055	0.4
2016	26,388	6.5
2017	29,405	15.1
2018	26,937	-4.6
2019	31,096	18.8
2020	35,028	11.1

[1/]Returns were calculated using the Modified Dietz day-weighted return methodology.

Largest Assets Held

December 31, 2020 (unaudited)

U.S. Equity

Holding	Fair Value
Apple Inc	$424,893,814
Microsoft Corp	354,315,727
Amazon.com Inc	273,885,014
Facebook Inc	142,198,901
Alphabet Inc Class C	116,307,313
Tesla Inc	105,717,834
Alphabet Inc Class A	104,290,843
Johnson & Johnson	92,062,579
Berkshire Hathaway Inc	86,489,597
Mastercard Inc	82,298,228

Non-U.S. Equity

Holding	Fair Value
Brookfield Asset Management Inc	$119,816,921
Linde PLC	41,731,025
Accenture PLC	32,941,193
Medtronic PLC	31,086,145
Taiwan Semiconductor Manufacturing Corp	31,053,829
Keyence Corp	23,571,892
LVMH Moet Hennessy Louis Vuitton	22,816,577
Shin-Etsu Chemical Co Ltd	17,385,636
AIA Group Ltd	17,292,442
CSL Ltd	14,640,562

Non-U.S. Fixed Income

Holding	Fair Value
Petroleos Mexicanos, 7.690% January 23, 2050	$9,660,043
Mexican Bonos, 7.750% November 13, 2042	7,733,882
Mexican Bonos, 8.500% May 31, 2029	7,548,732
Mexican Bonos, 8.500% November 18, 2038	6,632,734
Westpac Banking Corp, 3.350% March 8, 2027	6,193,517
Argentine Republic Government, STEP July 9, 2030	6,146,194
Colombian Tes, 6.000% April 28, 2028	5,987,865
Mexico Government International, 4.750% April 27, 2032	5,668,485
Mexico Government International, 4.125% January 21, 2026	5,651,850
European Investment Bank, 2.250% March 15, 2022	5,575,238

Note: A detailed list of SERS investment holdings at December 31, 2020 may be viewed at www.SERS.pa.gov.

Largest Assets Held

December 31, 2020 (unaudited)

U.S. Government and Government Related Fixed Income

Holding	Fair Value
U.S. Treasury Note, 0.625% August 15, 2030	$353,130,375
U.S. Treasury Note, 0.625% May 15, 2030	182,216,271
U.S. Treasury Note, 1.500% February 15, 2030	117,173,153
U.S. Treasury Inflation Index Note, 0.125% January 15, 2023	100,858,251
U.S. Treasury Inflation Index Note, 0.625% January 15, 2026	94,505,354
U.S. Treasury Inflation Index Note, 3.625% April 15, 2028	86,095,122
U.S. Treasury Inflation Index Note, 0.250% January 15, 2025	82,702,536
U.S. Treasury Inflation Index Note, 0.125% October 15, 2024	82,599,528
U.S. Treasury Inflation Index Note, 2.375% January 15, 2025	71,301,789
U.S. Treasury Inflation Index Note, 1.000% February 15, 2046	65,204,078

U.S. Corporate Fixed Income

Holding	Fair Value
Goldman Sachs Group Inc, 5.750% January 24, 2022	$8,424,290
GE Capital International Funding Co, 4.418% November 15, 2035	8,371,560
Bank of America Corp, Variable Rate March 20, 2051	6,099,662
BX Commercial Mortgage Trust 2019-XL, Variable Rate October 15, 2036	6,004,611
Towd Point Mortgage, Variable Rate October 25, 2059	5,634,128
General Electric Co, 4.350% May 1, 2050	5,576,048
Bank of America Corp, Variable Rate December 20, 2028	5,517,803
JP Morgan Chase and Co, Variable Rate February 01, 2028	5,172,165
Goldman Sachs Group Inc, Variable Rate February 23, 2023	5,041,503
Sysco Corp, 3.300% July 15, 2026	4,877,216

Note: A detailed list of SERS investment holdings at December 31, 2020, may be viewed at www.SERS.pa.gov.

Schedule of Trading Broker Commissions

December 31, 2020 (unaudited)

Broker commissions on equity and fixed income investment transactions for the year ended December 31, 2020 were $3.0 million. Below is a list of brokers receiving commissions in excess of $20,000 during the year.

Broker	Commissions
Fidelity	$1,037,400
Goldman Sachs	193,481
Royal Bank of Canada	192,980
Citigroup	176,937
Merrill Lynch	144,510
Liquidnet	125,209
UBS	102,641
CITIC	101,223
JP Morgan Chase	97,450
Nomura Group	88,882
Morgan Stanley Smith Barney	78,017

Broker	Commissions
Jeffries and Company	$67,964
Sturdivant	60,366
Wells Fargo and Company	54,731
Cowen and Company	41,786
Raymond James & Associates	38,008
Barclays	28,474
Macquarie Group	25,959
Credit Suisse	25,191
Stifel Nicolaus	21,235
Loop Capital Markets	20,479
BTIG	20,144

Investment Summary

December 31, 2020 (unaudited)

The assets of SERS are administered by the board. The board adopted an investment policy that incorporates the provisions of the Retirement Code, which governs the investment of SERS' assets. SERS' investment plan is reviewed and updated regularly for strategic asset allocation purposes, as well as for diversification needs within each asset class.

Investments on the Statements of Fiduciary Net Position for financial reporting purposes are not based on the below asset allocation. The asset allocation is for investment reporting purposes only. As such, there may be differences between the Financial Section and the Investment Section.

Asset Allocation

($ millions)

Asset Class	Fair Value	% of Total Fund	Long-Term 10-Year Strategic Target
Private Equity	$5,167.3	14.7%	14.0%
Private Credit	664.5	1.9	4.0
Real Estate	2,587.4	7.4	8.0
U.S. Equity	8,894.4	25.4	25.0
International Developed Markets Equity	4,614.8	13.2	13.0
Emerging Markets Equity	1,595.4	4.5	4.0
Fixed Income	9,697.7	27.6	26.0
Inflation Protection (TIPS)	1,292.0	3.7	4.0
Cash	540.0	1.5	2.0
Legacy Hedge Funds	24.2	0.1	*
Total Fund	**$35,077.7**	**100.0%**	**100.0%**

*Legacy Hedge Funds asset class is in liquidation.

Number of Investment Managers and Portfolios

Asset Class	Investment Managers	Investment Portfolios
Private Equity	63	186
Private Credit	10	17
Real Estate	26	55
U.S. Equity	2	4
International Developed Markets Equity	9	9
Emerging Markets Equity	5	5
Fixed Income	9	12
Inflation Protection (TIPS)	3	3
Cash	1	1
Legacy Hedge Funds	8	8
Total	**136**	**300**

Investment Summary - Private Equity

December 31, 2020 (unaudited)

Objective

The objective of Private Equity is to achieve a return in excess of its public equity benchmark (75% Russell 3000 Index / 25% MSCI World ex U.S. Index plus a 300 basis point premium) over 10-year periods (annualized, net of fees).

Structure

Private Equity investments are non-traditional investments made in the form of closed-end limited partnership structures organized to make domestic and international private investments such as buyouts, special situations, and growth equity.

Private Equity

($ millions)

	Unfunded Commitments	Fair Value	% of Total Fund
Core Sub-Asset Classes			
Buyouts	$1,875.8	$2,716.8	7.7%
Special Situations	516.2	503.5	1.4
Growth Equity	189.2	1,294.5	3.7
Total Core Sub-Asset Classes	**2,581.2**	**4,514.8**	**12.8**
Non-Core Holdings[1/]			
Keystone Legacy Fund	123.4	652.5	1.9
Total Private Equity	**$2,704.6**	**$5,167.3**	**14.7%**

[1/]A total of 120 legacy holdings from the Private Equity core sub-asset classes (Buyouts, Special Situations, and Growth Equity) make up the Keystone Legacy Fund, a special purpose vehicle which is managed by a third-party.

Investment Summary - Private Equity

December 31, 2020 (unaudited)

Portfolio Exposure

The Private Equity program is well diversified by sub-sector, geography, and industry focus. As of September 30, 2020, based on fair value, the program's exposure was:

By Fund Sub-Sector	
U.S. Buyout	37.0%
Non-U.S.[1/]	30.1
U.S. Growth Equity	22.3
Special Situations	6.5
Pennsylvania-Related	4.1

By Geography[2/]	
United States	66.7%
China	7.4
United Kingdom	3.6
Germany	3.0
India	2.5
South Korea	2.4
Brazil	1.3
Rest of World	13.1

By Industry[2/]	
Information Technology	43.3%
Consumer Discretionary	13.6
Industrials	11.7
Health Care	11.3
Financials	7.5
Telecommunication Services	4.2
Consumer Staples	3.4
Materials	2.1
Energy	1.5
Real Estate	0.9
Utilities	0.5

[1/]Some managers with a domestic investment focus may invest globally. Thus, non-U.S. exposure measured on a portfolio company basis will be greater.

[2/]Geography and industry are determined by the portfolio company.

Investment Summary - Private Equity

December 31, 2020 (unaudited)

The Capital Committed column represents total dollars allocated from SERS to each limited partnership. Accumulated Capital Drawn is the portion of SERS' capital commitments drawn by the general partner to be invested with underlying portfolio companies along with any reinvested capital. The Accumulated Distributions column shows the value of capital and profits returned to SERS.

Buyouts Committed, Drawn, and Distributed

Active Buyout Funds Limited Partnership	Strategy/ Stage	SERS Initial Funding	Capital Committed[1/]	Accumulated Capital Drawn	Accumulated Distributions[2/]
ABRY Partners IV	Small	3/30/2001	$27,242,773	$25,497,290	$74,633,973
ABRY Partners V	Small	7/29/2005	45,000,000	41,752,543	84,778,199
ABRY Partners VI	Middle	3/26/2008	50,000,000	59,994,861	107,608,270
ABRY Partners VII	Middle	8/10/2011	30,000,000	37,911,447	48,786,607
ABRY Partners VIII	Middle	5/5/2015	25,000,000	29,228,068	20,190,375
Advent Latin American Private Equity Fund IV	Small	8/2/2007	30,000,000	30,797,073	43,265,921
Advent International GPE VI-A	Middle	7/7/2008	35,000,000	35,146,325	68,452,177
Advent Latin American Private Equity Fund V	Small	7/5/2011	15,000,000	14,430,000	8,325,000
Advent International GPE VII-B	Global	12/6/2012	40,000,000	37,600,000	39,766,044
Advent Latin American Private Equity Fund VI	Global	8/13/2015	25,000,000	20,300,000	5,000,000
Advent International GPE VIII-B	Global	9/26/2016	50,000,000	47,450,001	0
Altaris Health Partners V	Middle	*	50,000,000	0	0
Apollo Investment Fund IV	Large	9/30/1998	75,000,000	74,838,620	124,814,033
Apollo Investment Fund V	Large	8/23/2001	50,000,000	44,972,146	122,673,016
Apollo Investment Fund VI	Global	7/19/2006	40,000,000	38,911,805	64,467,407
Apollo Investment Fund IX	Global	3/15/2019	85,400,000	23,032,685	2,157,713
Asia Alternatives Capital Partners	Fund of Funds	6/26/2007	25,000,000	25,208,545	42,288,913
Asia Alternatives Capital Partners II	Fund of Funds	3/7/2008	29,949,500	29,017,471	52,058,091
Asia Alternatives Korea Buyout Investors (Hahn & Co)	Fund of Funds	7/22/2011	7,000,000	8,763,802	9,797,230
Asia Alternatives Capital Partners III	Fund of Funds	8/3/2012	50,000,000	54,404,036	47,177,090
Penn Asia Investors	Fund of Funds	9/28/2012	133,000,000	97,161,881	53,733,769
Asia Alternatives Capital Partners V	Fund of Funds	10/5/2017	50,000,000	23,067,550	584,065
Audax Private Equity Fund	Small	5/25/2000	35,000,000	36,839,098	56,057,910
Audax Private Equity Fund II	Middle	6/17/2005	25,000,000	25,517,152	46,325,622
Audax Private Equity Fund III	Middle	11/7/2007	37,000,000	42,498,691	81,672,112
Audax Private Equity Fund V	Large	1/25/2016	50,000,000	44,032,670	15,657,020
Audax Private Equity Fund VI	Small	8/29/2019	75,000,000	19,489,494	1,798,070
Berkshire Fund VI	Middle	7/11/2002	20,000,000	18,819,615	54,873,734
Berkshire Fund VII	Middle	11/15/2006	32,000,000	32,613,861	68,126,503
Berkshire Fund VIII	Large	8/25/2011	30,000,000	32,062,612	29,954,225
Blackstone Communications Partners I	Global	8/29/2000	25,000,000	25,114,042	30,998,189
Blackstone Capital IV	Middle	2/26/2003	69,379,875	69,119,097	192,546,094

Investment Summary - Private Equity

December 31, 2020 (unaudited)

Buyouts Committed, Drawn, and Distributed (continued)

Active Buyout Funds Limited Partnership	Strategy/ Stage	SERS Initial Funding	Capital Committed[1/]	Accumulated Capital Drawn	Accumulated Distributions[2/]
Blackstone Capital Partners V	Large	5/30/2006	$150,000,000	$150,111,788	$242,378,234
Blackstone Capital Partners VII	Middle	10/21/2016	50,000,000	49,052,538	4,551,963
Blackstone Capital Partners VIII	Global	*	70,000,000	0	0
Capvis Equity IV	Middle	1/30/2014	42,701,512	44,923,075	33,984,236
Carlyle Energy Mezzanine Opportunities Fund	Global	9/5/2012	50,000,000	65,140,434	31,410,748
Horizon Strategic Fund - Carlyle Group	Global	1/23/2014	100,000,000	86,601,204	42,848,347
CVC Capital Partners VII	Global	12/3/2018	95,437,107	45,718,040	563,383
CVC Capital Partners VIII (A)	Global	*	54,000,000	0	0
Eureka II	Global	1/30/2006	20,000,000	21,906,935	22,678,390
Eureka Growth Capital III	Small	10/21/2013	20,000,000	15,453,524	13,697,042
Francisco Partners II	Middle	7/10/2006	30,000,000	29,383,916	42,905,515
Francisco Partners III	Global	10/17/2011	20,000,000	20,514,684	33,151,148
Francisco Partners IV	Global	4/15/2015	25,000,000	24,656,280	21,406,842
FSN Capital IV	Small	12/19/2013	37,900,476	37,755,593	55,829,456
FSN Capital V	Small	1/4/2017	80,319,520	65,981,081	13,240,086
Great Hill Equity Partners IV	Middle	9/8/2008	25,000,000	25,125,662	59,603,949
GTCR VIII	Middle	7/7/2003	75,000,000	69,393,599	120,471,948
GTCR Fund XI	Middle	9/2/2014	25,000,000	23,156,003	27,684,684
GTCR Fund XII	Small	5/4/2018	32,500,000	19,207,500	753,366
H.I.G. Growth Buyouts & Equity Fund II	Small	7/20/2011	15,000,000	15,898,204	10,010,436
H.I.G. Europe Capital Partners II	Middle	1/10/2014	24,735,655	20,061,285	4,467,565
H.I.G. Brazil and Latin America Partners	Middle	8/12/2015	50,000,000	29,942,431	9,139
Hahn & Company II	Small	5/29/2015	50,000,000	54,208,484	14,174,068
Hahn & Company III	Large	12/20/2018	56,250,000	9,704,001	83,933
Hahn & Company III - Supplemental Fund	Large	12/20/2018	18,750,000	5,944,175	57,377
HarbourVest IPEP III	Small	6/30/1998	40,000,000	39,400,000	61,092,165
HIPEP V-Asia Pacific & Rest of World	Small	5/9/2006	30,000,000	28,245,316	36,187,819
Horizon Impact Fund	Middle	10/24/2014	50,000,000	44,629,802	25,251,222
Horizon Impact Fund B	Middle	5/31/2017	100,000,000	59,250,000	990,000
HarbourVest PA Co-Investment Fund	Middle	5/14/2020	200,000,000	21,650,000	0
Hellman & Friedman Capital Partners VI	Fund of Funds	6/5/2007	125,000,000	119,913,412	222,910,013
Hellman & Friedman Capital Partners VIII	Fund of Funds	9/1/2016	50,000,000	50,622,049	6,481,085
Hellman & Friedman Capital Partners IX	Fund of Funds	1/1/2019	90,000,000	20,006,514	0
Incline Equity Partners III	Fund of Funds	1/14/2013	15,000,000	15,870,790	29,204,254
Kelso VII	Co-Investment	10/18/2004	40,000,000	41,169,937	65,821,118
Kelso VIII	Global	11/29/2007	150,000,000	146,324,156	169,841,890
LLR Equity Partners II	Global	1/29/2004	25,000,000	25,000,000	45,084,480
LLR Equity Partners III	Global	7/24/2008	30,000,000	29,108,722	51,222,009

Investment Summary - Private Equity

December 31, 2020 (unaudited)

Buyouts Committed, Drawn, and Distributed (continued)

Active Buyout Funds Limited Partnership	Strategy/ Stage	SERS Initial Funding	Capital Committed[1/]	Accumulated Capital Drawn	Accumulated Distributions[2/]
LLR Equity Partners IV	Small	3/14/2014	$50,000,000	$45,485,764	$59,180,894
LLR Equity Partners V	Middle	3/21/2018	75,000,000	54,882,292	6,825,485
LLR Equity Partners VI	Large	*	50,000,000	0	0
Madison Dearborn Capital Partners IV	Small	4/2/2001	90,000,000	90,365,390	169,072,775
Madison Dearborn Capital Partners V	Small	12/14/2006	75,000,000	71,556,584	113,632,910
Madison Dearborn Capital Partners VI	Small	5/27/2008	50,000,000	53,140,073	88,197,217
NGP XII	Middle	11/14/2018	75,000,000	39,733,831	113,471
NGP Keystone	Middle	*	25,000,000	0	0
Neuberger Berman PA Co-Investment Fund	Large	*	200,000,000	0	0
OCM/GFI Power Opportunities Fund II	Large	5/9/2005	13,431,284	13,470,852	41,644,215
Oaktree Power Opportunities Fund III	Large	10/18/2010	25,000,000	19,267,532	24,445,586
Permira Susquehanna Opportunities - Buyout	Large	*	40,000,000	0	0
Permira European Fund II	Co-Investment	6/7/2000	45,672,612	45,672,612	91,560,959
Permira European Fund III	Small	1/12/2004	127,062,518	127,340,454	218,052,206
Permira IV	Middle	12/14/2006	136,324,852	138,372,478	205,123,986
Permira VI	Global	1/10/2017	57,228,368	51,150,582	7,745,206
Permira VII	Large	2/4/2020	79,935,376	13,239,036	0
Primavera Capital Fund II	Large	11/17/2015	50,000,000	54,465,356	11,173,522
Primavera Capital Fund III	Global	4/12/2019	75,000,000	58,891,548	291,169
Providence Equity Partners IV	Global	11/27/2000	25,000,000	23,420,840	56,065,270
Providence Equity Partners V	Global	4/4/2005	45,000,000	42,692,171	51,743,883
Providence Equity Partners VI	Middle	3/16/2007	49,976,748	54,576,396	60,052,733
Ridgemont Equity Partners II	Large	11/30/2015	50,000,000	48,547,530	27,657,924
Sentinel Capital Partners V	Middle	7/15/2014	10,000,000	10,070,597	8,255,441
Silver Lake Partners V	Large	6/12/2018	78,000,000	59,475,900	663,420
Sterling Group Partners IV	Global	6/15/2016	20,000,000	16,817,832	904,208
TA X	Small	4/25/2006	70,000,000	69,732,009	91,152,009
TDR Capital IV	Middle	11/16/2018	93,605,827	34,834,570	0
Thoma Bravo Fund XIII	Global	2/14/2019	75,000,000	53,937,703	35,023,707
Thoma Bravo Fund XIV	Large	*	50,000,000	0	0
Thoma Bravo Discover Fund III	Middle	*	20,000,000	0	0
Newbridge Asia IV	Global	9/27/2005	40,000,000	38,903,378	85,845,344
TPG Partners III	Large	1/13/2000	64,375,746	64,119,169	165,990,273
TPG Partners IV	Large	12/29/2003	27,907,484	27,981,463	58,018,004
TPG Partners V	Global	6/27/2006	88,831,038	92,531,812	129,624,285
TPG Asia V	Large	2/19/2008	22,500,000	21,964,311	27,510,189
TPG Partners VI	Global	5/22/2008	44,294,641	50,432,611	67,270,468
TSG8	Large	1/3/2020	100,000,000	20,099,912	0

Investment Summary - Private Equity

December 31, 2020 (unaudited)

Buyouts Committed, Drawn, and Distributed (continued)

Active Buyout Funds Limited Partnership	Strategy/ Stage	SERS Initial Funding	Capital Committed[1/]	Accumulated Capital Drawn	Accumulated Distributions[2/]
Vista Equity Partners Fund VI	Global	12/29/2016	$150,000,000	$168,175,328	$56,581,291
Vista Equity Partners Fund VII	Global	2/13/2019	75,000,000	26,283,318	174,838
Wind Point Partners VIII	Small	9/14/2017	100,000,000	91,615,017	48,554,180
Wind Point Partners IX-A	Middle	2/26/2020	75,000,000	13,731,184	0
Total Active Buyouts			**$6,242,712,912**	**$4,623,601,050**	**$5,116,762,350**

Cash flows as of September 30, 2020.

*Not funded as of September 30, 2020.

[1/]Commitments as of December 31, 2020.

[2/]Distributions include stock distributions. Distributions may include fees that are recorded as negative distributions to be offset against future distributions of the underlying limited partnership investment.

Investment Summary - Private Equity

December 31, 2020 (unaudited)

The Capital Committed column represents total dollars allocated from SERS to each limited partnership. Accumulated Capital Drawn is the portion of SERS' capital commitments drawn by the general partner to be invested with underlying portfolio companies along with any reinvested capital. The Accumulated Distributions column shows the value of capital and profits returned to SERS.

Special Situations Committed, Drawn, and Distributed

Active Special Situations Funds Limited Partnership	Strategy/ Stage	SERS Initial Funding	Capital Committed[1/]	Accumulated Capital Drawn	Accumulated Distributions[2/]
ABRY Mezzanine Partners	Mezzanine	3/15/2002	$30,000,000	$26,731,187	$49,707,116
ABRY Senior Equity II	Mezzanine	7/27/2006	30,000,000	28,282,103	44,960,375
ABRY Advanced Securities Fund	Mezzanine	8/1/2008	7,262,950	23,508,684	38,682,209
ADV Opportunities Fund I	Distressed/ Turnaround	10/5/2015	50,000,000	58,077,617	9,099,825
AXA Secondary Fund III	Secondaries	11/19/2004	26,000,000	21,737,894	37,244,706
AXA Secondary Fund III-2	Secondaries	11/24/2004	14,000,000	11,677,210	19,062,764
AXA Secondary Fund IV	Secondaries	2/26/2007	80,000,000	70,134,752	99,186,788
AXA Secondary Fund V B	Secondaries	6/19/2012	75,000,000	61,682,742	97,337,534
ASF VII B	Secondaries	2/19/2016	100,000,000	56,694,086	11,274,533
ASF VII PA Co-Invest	Secondaries	5/18/2016	50,000,000	28,529,951	6,187,625
ASF VIII B	Secondaries	6/13/2019	100,000,000	18,070,147	42,362
ASF VIII PA Co-Invest	Secondaries	3/12/2020	50,000,000	5,000	0
Ares PA Opportunities Fund - Special Situations	Distressed/ Turnaround	*	100,000,000	0	0
Avenue Special Situations Fund VI	Distressed/ Turnaround	11/2/2010	20,000,000	20,068,464	20,720,289
Centerbridge Capital Partners I	Distressed/ Turnaround	2/27/2007	50,000,000	57,399,008	114,404,865
Centerbridge Capital Partners III	Distressed/ Turnaround	5/21/2015	30,000,000	26,189,002	11,987,854
Clearlake Capital Partners IV	Distressed/ Turnaround	9/1/2015	15,000,000	21,809,094	18,109,580
Clearlake Capital Partners V	Distressed/ Turnaround	2/1/2018	55,000,000	50,650,059	15,464,574
Clearlake Capital Partners VI	Distressed/ Turnaround	5/22/2020	60,000,000	8,238,827	70,231
Dover Street VII	Distressed/ Turnaround	7/2/2008	30,000,000	28,696,128	39,102,133
H.I.G. Bayside Debt & LBO Fund II	Secondaries	6/17/2008	30,000,000	30,998,253	47,092,349
H.I.G. Bayside Loan Opp. Fund III	Distressed/ Turnaround	6/12/2013	50,000,000	40,418,122	40,802,856
H.I.G. Bayside Loan Opp. Fund IV	Distressed/ Turnaround	1/16/2015	25,000,000	22,626,299	13,329,924
KPS Special Situations Fund IV	Distressed/ Turnaround	5/8/2014	25,000,000	23,342,222	7,222,716
KPS Special Situations Mid-Cap Fund	Distressed/ Turnaround	11/25/2019	25,000,000	4,521,833	0
KPS Special Situations Fund V	Distressed/ Turnaround	7/13/2020	75,000,000	14,199,017	0

Investment Summary - Private Equity

December 31, 2020 (unaudited)

Special Situations Committed, Drawn, and Distributed (continued)

Active Special Situations Funds Limited Partnership	Strategy/Stage	SERS Initial Funding	Capital Committed[1/]	Accumulated Capital Drawn	Accumulated Distributions[2/]
LBC Credit Partners III	Mezzanine	3/4/2013	$50,000,000	$46,696,253	$48,180,953
Lexington Capital Partners III	Secondaries	1/26/1999	35,000,000	34,516,449	43,363,378
Lexington Capital Partners V	Secondaries	1/17/2002	75,000,000	74,623,418	125,170,164
Lexington Capital Partners VI	Secondaries	10/21/2005	50,000,000	53,066,325	70,707,934
OCM Opportunities Fund V	Distressed/ Turnaround	8/12/2004	40,000,000	40,003,507	65,911,274
OCM Opportunities Fund VI	Distressed/ Turnaround	9/28/2005	40,000,000	40,000,000	63,171,009
OCM Principal Opportunities Fund IV	Distressed/ Turnaround	1/24/2007	20,000,000	20,400,000	34,058,279
OCM Opportunities Fund VII	Distressed/ Turnaround	5/16/2007	40,000,000	40,000,000	54,806,896
OCM Opportunities Fund VII b	Distressed/ Turnaround	6/3/2008	40,000,000	36,000,000	62,262,693
OCM Opportunities Fund VIII	Distressed/ Turnaround	9/20/2010	12,500,000	12,583,425	17,717,075
OCM Opportunities Fund VIII b	Distressed/ Turnaround	8/22/2011	12,500,000	12,500,000	12,982,282
Oaktree Opportunities Fund IX	Distressed/ Turnaround	3/26/2013	50,000,000	50,000,000	25,342,085
Platinum Equity Capital Partners III	Distressed/ Turnaround	8/5/2013	50,000,000	47,749,134	69,168,128
RRJ Capital Master Fund III	Distressed/ Turnaround	12/10/2015	50,000,000	44,739,703	38,469,288
Total Active Special Situations			**$1,767,262,950**	**$1,307,165,915**	**$1,472,404,646**

Cash flows as of September 30, 2020.

*Not funded as of September 30, 2020.

[1/]Commitments as of December 31, 2020.

[2/]Distributions include stock distributions. Distributions may include fees that are recorded as negative distributions to be offset against future distributions of the underlying limited partnership investment.

Investment Summary - Private Equity

December 31, 2020 (unaudited)

The Capital Committed column represents total dollars allocated from SERS to each limited partnership. Accumulated Capital Drawn is the portion of SERS' capital commitments drawn by the general partner to be invested with underlying portfolio companies along with any reinvested capital. The Accumulated Distributions column shows the value of capital and profits returned to SERS.

Growth Equity Committed, Drawn, and Distributed

Active Growth Equity Funds Limited Partnership	Strategy/ Stage	SERS Initial Funding	Capital Committed[1/]	Accumulated Capital Drawn	Accumulated Distributions[2/]
Battery Ventures VIII	Venture Capital	8/13/2007	$25,000,000	$25,050,751	$55,636,614
Battery Ventures VIII Side Car Fund	Venture Capital	8/29/2008	6,768,000	6,803,790	17,449,466
HarbourVest Partners VI	Fund of Funds	5/7/1999	200,000,000	196,586,055	251,156,017
HarbourVest Partners VII	Fund of Funds	3/24/2003	75,000,000	73,687,500	109,284,862
HarbourVest Partners VIII	Fund of Funds	10/5/2006	100,000,000	98,000,000	146,878,621
Insight Venture Partners VI	Medium	8/21/2007	30,000,000	32,244,177	81,709,725
Insight Venture Partners VII	Large	4/27/2011	20,000,000	21,319,992	45,165,537
Insight Venture Partners VIII	Large	7/10/2013	50,000,000	52,250,000	75,385,447
Insight Venture Partners IX	Large	3/24/2015	50,000,000	51,172,788	16,325,931
Insight Venture Partners X	Large	4/17/2018	100,000,000	93,800,000	34,245
Insight Venture Partners XI	Large	3/25/2020	75,000,000	21,000,000	7,214
JMI Equity Fund VI	Medium	6/27/2007	40,000,000	40,000,246	69,017,467
JMI Equity Fund VII	Medium	2/14/2011	10,000,000	9,780,000	15,739,201
JMI Equity Fund VIII	Medium	10/1/2015	25,000,000	26,900,000	16,068,006
Lightspeed Venture Partners VII	Venture Capital	2/27/2006	18,000,000	18,000,000	49,449,448
Lightspeed Venture Partners VIII	Venture Capital	6/27/2008	15,000,000	15,000,000	32,346,178
Lightspeed India Partners I	Venture Capital	8/14/2015	15,000,000	13,590,000	1,576,000
Meritech Capital Partners IV	Venture Capital	2/10/2011	20,000,000	19,700,000	34,341,511
Meritech Capital Partners V	Venture Capital	9/3/2014	23,000,000	21,332,500	22,683,152
New Enterprise Associates IX	Venture Capital	11/15/1999	20,000,000	19,600,000	8,228,227
New Enterprise Associates X	Venture Capital	12/11/2000	35,000,000	35,028,000	33,995,586
New Enterprise Associates 11	Venture Capital	3/1/2004	25,000,000	25,000,000	63,385,828
New Enterprise Associates 12	Venture Capital	6/26/2006	35,000,000	35,631,130	46,722,311
NewSpring Growth Capital II	Small	4/20/2007	10,000,000	9,850,000	14,203,466
NewSpring Growth Capital III	Small	7/27/2012	25,000,000	23,643,105	17,097,833
Providence Strategic Growth II	Medium	12/7/2016	60,000,000	68,295,442	44,766,872
Providence Strategic Growth III	Medium	7/26/2018	75,000,000	54,430,567	13,014,791
Providence Strategic Growth IV	Large	3/27/2020	75,000,000	13,766,574	2,293,574

Investment Summary - Private Equity

December 31, 2020 (unaudited)

Growth Equity Committed, Drawn, and Distributed (continued)

Active Growth Equity Funds Limited Partnership	Strategy/ Stage	SERS Initial Funding	Capital Committed[1/]	Accumulated Capital Drawn	Accumulated Distributions[2/]
Providence Strategic Growth Europe	Medium	*	$75,000,000	$0	$0
T.Rowe Price Stock Distribution Account[3/]	Various	1/3/2005	0	1,214,214,292	1,123,158,314
TCV X	Large	5/17/2019	75,000,000	42,067,500	0
Weathergage Venture Capital	Fund of Funds	6/26/2007	25,000,000	22,875,000	35,101,174
Weathergage Venture Capital II	Fund of Funds	6/29/2010	25,000,000	23,250,000	23,561,515
Total Active Growth Equity			**$1,457,768,000**	**$2,423,869,409**	**$2,465,784,133**

Cash flows as of September 30, 2020.

*Not funded as of September 30, 2020.

[1/]Commitments as of December 31, 2020.

[2/]Distributions include stock distributions. Distributions may include fees that are recorded as negative distributions to be offset against future distributions of the underlying limited partnership investment.

[3/]T. Rowe Price acts as a stock liquidation account. All cash and stock distributions are reflected in the corresponding distributions.

The Capital Committed column represents total dollars allocated from SERS to each limited partnership. Accumulated Capital Drawn is the portion of SERS' capital commitments drawn by the general partner to be invested with underlying portfolio companies along with any reinvested capital. The Accumulated Distributions column shows the value of capital and profits returned to SERS.

Legacy Private Equity Committed, Drawn, and Distributed

Legacy Private Equity Funds Limited Partnership	Strategy/ Stage	SERS Initial Funding	Capital Committed[1/]	Accumulated Capital Drawn	Accumulated Distributions[2/]
Keystone Legacy Non-Core Fund[3/]	Various	7/1/2018	$4,752,570,409	$4,771,463,241	$6,132,843,774
Total Legacy Private Equity			**$4,752,570,409**	**$4,771,463,241**	**$6,132,843,774**

Cash flows as of September 30, 2020.

[1/]Commitments as of September 30, 2020.

[2/]Distributions include stock distributions. Distributions may include fees that are recorded as negative distributions to be offset against future distributions of the underlying limited partnership investment.

[3/]A total of 120 legacy holdings from the Private Equity core sub-asset classes (Buyouts, Special Situations, and Growth Equity) make up the Keystone Legacy Fund, a special purpose vehicle which is managed by a third-party.

Investment Summary - Private Credit

December 31, 2020 (unaudited)

Objective

The objective of Private Credit is to achieve a return in excess of the S&P/LSTA Leveraged Loan Index plus 100 basis points over 10-year periods (annualized, net of fees).

Structure

Private Credit investments are non-traditional investments made in the form of closed-end limited partnership structures organized to invest in a diverse set of strategies including direct lending, diversified credit, and distressed debt.

Direct lending funds will lend money to privately held firms, often as part of a private equity leveraged buyout transaction. These loans will be predominantly medium-duration, floating rate, and senior in the capital structure.

Diversified credit funds may invest in various credit strategies including specialty lending, niche credit opportunities, mezzanine and other debt securities, credit derivatives, structured credit and structured equity.

Distressed debt funds will invest in the credit securities of distressed companies or companies in need of restructuring. Private Credit funds are less liquid than public fixed income with investment horizons of five years or more.

Private Credit

($ millions)

Sub-Asset Class	Unfunded Commitments	Fair Value	% of Total Fund
Direct Lending	$346.3	$225.3	0.7%
Diversified Credit	466.5	291.7	0.8
Distressed Debt	148.1	147.5	0.4
Total Private Credit	**$960.9**	**$664.5**	**1.9%**

Investment Summary - Private Credit

December 31, 2020 (unaudited)

The Capital Committed column represents total dollars allocated from SERS to each limited partnership. Accumulated Capital Drawn is the portion of SERS' capital commitments drawn by the general partner to be invested with underlying portfolio companies along with any reinvested capital. The Accumulated Distributions column shows the value of capital and profits returned to SERS.

Private Credit Committed, Drawn, and Distributed

Active Private Credit Funds	Strategy/Stage	SERS Initial Funding	Capital Committed[1/]	Accumulated Capital Drawn	Accumulated Distributions[2/]
Direct Lending					
Ares PA Opportunities Fund - Direct Lending	Direct Lending	*	$100,000,000	$0	$0
Audax Direct Lending Solutions Fund-A	Direct Lending	10/26/2018	100,000,000	44,987,394	11,050,547
Brightwood Capital Fund IV	Direct Lending	4/24/2018	100,000,000	95,000,000	7,362,976
HPS Mezzanine Partners 2019	Direct Lending	*	75,000,000	0	0
Permira Credit Solutions IV Master (Feeder) SCSp	Direct Lending	9/26/2019	75,000,000	24,351,401	1,768,122
Permira Susquehanna Opportunities - Credit	Direct Lending	*	60,000,000	0	0
Total Direct Lending			**510,000,000**	**164,338,795**	**20,181,645**
Diversified Credit					
Apollo Hybrid Value Fund	Diversified Credit	12/24/2018	100,000,000	71,733,747	18,186,993
Ares PA Opportunities Fund - Diversified Credit	Diversified Credit	*	100,000,000	0	0
Clearlake Opportunity Partners II	Diversified Credit	8/30/2019	75,000,000	19,063,943	209,533
ICG Europe Fund VII	Diversified Credit	8/24/2018	94,527,694	34,892,455	13,618
ICG North American Private Debt Fund II	Diversified Credit	2/27/2019	50,000,000	12,995,957	1,276,557
ICG Europe Mid-Market Fund	Diversified Credit	4/8/2020	80,213,198	3,465,602	0
TSSP Adjacent Opportunities Partners (B)	Diversified Credit	11/9/2017	100,000,000	73,039,075	19,778,398
TSSP Adjacent Opportunities Partners Contingent	Diversified Credit	4/16/2020	150,000,000	31,742,776	306
Total Diversified Credit			**749,740,892**	**246,933,555**	**39,465,405**
Distressed Debt					
Ares PA Opportunities Fund - Distressed Debt	Distressed Debt	12/20/2019	70,000,000	28,700,753	416,269
Glendon Opportunities Fund II	Distressed Debt	10/18/2019	150,000,000	71,250,000	0
TSSP Opportunities Partners IV	Distressed Debt	1/25/2019	50,000,000	17,263,175	1,637,192
Total Distressed Debt			**270,000,000**	**117,213,928**	**2,053,461**
Total Private Credit			**$1,529,740,892**	**$528,486,278**	**$61,700,511**

Cash flows as of September 30, 2020.

*Not funded as of September 30, 2020.

[1/]Commitments as of December 31, 2020.

[2/]Distributions include stock distributions. Distributions may include fees that are recorded as negative distributions to be offset against future distributions of the underlying limited partnership investment.

Investment Summary - Real Estate

December 31, 2020 (unaudited)

Objective

The objective of Real Estate is to generate returns through capital appreciation and current income to achieve a return in excess of its benchmark (90% NCREIF Fund Index – Open End Diversified Core Equity ("NFI-ODCE") / 10% FTSE NAREIT U.S. Real Estate Index) over 5-year periods (annualized, net of fees). Real Estate investments may also lower overall fund volatility and provide a moderate hedge against inflation.

Structure

Real Estate investments are non-traditional investments made in the form of individually managed accounts and pooled investment vehicles organized to invest in private market equity and debt investments in real estate and real estate related companies and public market investments in real estate investment trusts (REITs) and real estate operating companies.

Real Estate

($ millions)

Sub-Asset Class	Fair Value	% of Total Fund
Core/Core Plus[1/]	$1,034.4	3.0%
Value Add/Opportunistic Funds[2/]	562.0	1.6
Value Add/Opportunistic SMA	714.1	2.0
Real Estate Securities	271.7	0.8
Legacy Real Assets	5.2	0.0
Total Real Estate	**$2,587.4**	**7.4%**

[1/]Unfunded commitments are $131.8 million.

[2/]Unfunded commitments are $444.6 million.

Investment Summary - Real Estate

December 31, 2020 (unaudited)

The Capital Committed column represents total dollars allocated from SERS to each fund/manager. Accumulated Capital Drawn is the portion of SERS' capital commitments drawn by the fund/manager to be invested. This amount may also include recycled capital (capital that was distributed and later recalled by the manager to be reinvested) as well as manager fees paid outside of the fund. The Accumulated Distributions column shows the value of capital and profits returned to SERS.

Real Estate

Active Fund / Manager	Asset Type	SERS Initial Funding	Capital Committed[1/]	Accumulated Capital Drawn	Accumulated Distributions
Core/Core Plus Real Estate					
Blackstone Property Partners	Diversified	2017	$300,000,000	$300,000,000	$1,744,007
Heitman America Real Estate Trust	Diversified	2007	100,000,000	100,000,000	83,249,173
Henderson Park Enhanced Income Fund	Diversified	2019	332,845,724	291,222,349	7,528,327
Oak Street Real Estate Capital Net Lease Property Fund	Diversified	2019	300,000,000	104,430,378	4,288,926
UBS Trumbull Property Fund	Diversified	1988	25,558,525	25,558,525	114,881,970
Total Core/Core Plus Real Estate			**1,058,404,249**	**821,211,252**	**211,692,403**
Value Add/Opportunistic Funds					
Activum SG Fund VI	Diversified	2019	58,481,692	2,781,565	0
Activum SG Fund VI Pennsylvania Side-Car	Diversified	*	58,481,692	0	0
AG Asia Realty Fund	Diversified	2007	25,000,000	23,500,000	25,375,000
Berwind Investment Partnership V	Diversified	1999	24,136,964	24,136,964	43,947,583
Berwind Investment Partnership VI	Diversified	2002	24,543,712	24,543,712	42,799,870
Berwind Investment Partnership VII	Diversified	2005	25,000,000	25,000,000	14,245,301
Berwind Investment Partnership VIII	Diversified	2007	15,588,238	14,912,018	20,049,072
Berwind Investment Partnership IX	Diversified	2012	25,000,000	24,303,409	37,778,298
Blackstone Real Estate Partners IV	Diversified	2003	25,000,000	25,000,000	40,257,893
Blackstone Real Estate Partners V	Diversified	2006	50,000,000	47,912,974	97,253,998
Blackstone Real Estate Partners VI	Diversified	2007	75,000,000	71,319,075	151,431,753
Blackstone Real Estate Partners VII	Diversified	2011	75,000,000	65,568,746	93,441,799
Blue Moon Senior Housing II	Senior Housing	2020	50,000,000	19,192,449	0
Blue Moon Senior Housing II Sidecar	Senior Housing	2020	50,000,000	20,992,041	0
C-III Recovery Fund III	Diversified	2017	100,000,000	54,291,412	0
Clerestory Small Cap Real Estate Fund I	Diversified	2010	18,000,000	15,228,956	15,131,513
Colony Investors VIII	Diversified	2007	22,500,000	21,655,800	7,962,017
Hawkeye Scout Fund I	Diversified	2009	75,000,000	75,000,000	117,006,454
Hawkeye Scout Fund II	Diversified	2016	30,000,000	30,000,000	605,865
Lubert Adler Fund VII	Diversified	2014	25,000,000	22,820,446	8,170,946
Mesirow Financial Real Estate Value Fund III	Multi-Family	2018	25,145,833	20,979,746	851,387
Oak Street Real Estate Capital Fund IV	Diversified	2017	100,000,000	100,000,000	13,242,284

Investment Summary - Real Estate

December 31, 2020 (unaudited)

Real Estate (continued)

Active Fund / Manager	Asset Type	SERS Initial Funding	Capital Committed[1/]	Accumulated Capital Drawn	Accumulated Distributions
Oak Street Real Estate Capital Fund V	Diversified	*	$50,000,000	$0	$0
Prudential Latin America Retail Fund I	Retail	2006	2,271,117	2,271,117	8,162,626
Prudential Latin America Residential Fund III	Multi-Family	2008	29,654,968	24,708,749	13,444,991
Prudential Senior Housing Fund IV	Senior Housing	2011	22,089,297	20,799,516	37,182,609
Prudential Senior Housing Fund V	Senior Housing	2015	50,000,000	41,137,690	3,216,633
Prudential Senior Housing Fund VI	Senior Housing	2019	100,000,000	9,043,808	0
Rockpoint Finance Fund I	Residential Land	2007	2,527,500	2,527,500	2,315,090
Rockpoint Real Estate Fund II	Diversified	2005	34,138,784	34,138,784	30,679,156
Rockpoint Real Estate Fund III	Diversified	2007	50,632,887	46,391,722	67,236,003
Rockpoint Real Estate Fund V	Diversified	2015	50,000,000	39,440,566	9,683,983
Rubicon First Ascent	Office	*	30,000,000	0	0
Rubicon First Ascent Sidecar	Office	*	20,000,000	0	0
SRE Opportunity Fund III	Diversified	2017	50,000,000	19,750,000	5,500,000
SRE Opportunity Fund III Select	Diversified	2017	50,000,000	12,625,000	0
Starwood Fund VI	Diversified	2001	50,000,000	50,000,000	51,927,126
Starwood Fund VII	Diversified	2006	35,000,000	35,000,000	27,295,581
Starwood Fund VIII	Diversified	2009	50,000,000	45,356,281	68,819,072
ValStone Opportunity Fund V	Diversified	2014	14,663,402	14,663,402	5,009,834
Westbrook Fund V	Diversified	2004	25,000,000	25,000,000	52,005,779
Westbrook Fund VI	Diversified	2006	35,000,000	35,000,000	37,571,397
Westbrook Fund VII	Diversified	2007	50,000,000	50,000,000	52,787,877
Westbrook Fund VIII	Diversified	2009	50,000,000	50,000,000	63,418,319
Total Value Add/Opportunistic Funds			**1,827,856,086**	**1,286,993,448**	**1,265,807,109**

Value Add/ Opportunistic SMA[2/]

Heitman I.M.A.	Diversified	1988	NA	813,635,039	1,092,759,873
hotelAVE I.M.A.	Hospitality	2018	NA	59,048,685	20,191,396
LaSalle I.M.A.	Diversified	1994	NA	452,963,167	778,848,456
LaSalle Takeover I.M.A.	Diversified	2018	NA	261,647,434	28,593,427
Total Value Add/Opportunistic SMA			**NA**	**1,587,294,325**	**1,920,393,152**

Real Estate Securities[2/]

CenterSquare Real Estate Securities	Diversified	2002	NA	183,616,773	36,168,336
Total Real Estate Securities			**NA**	**183,616,773**	**36,168,336**

Investment Summary - Real Estate

December 31, 2020 (unaudited)

Real Estate (continued)

Active Fund / Manager	Asset Type	SERS Initial Funding	Capital Committed[1/]	Accumulated Capital Drawn	Accumulated Distributions
Legacy Real Assets[2/]					
Forest I.M.A.	Timberland	1992	NA	$124,231,969	$242,667,376
Total Legacy Real Assets			**NA**	**124,231,969**	**242,667,376**
Total Active Real Estate			**$2,886,260,335**	**$4,003,347,767**	**$3,676,728,376**

Cash flows as of September 30, 2020.

*Not funded as of September 30, 2020.

[1/]Commitments as of December 31, 2020.

[2/]Due to the nature of the investments, there are no capital commitments for value add/opportunistic SMA, legacy real assets, and real estate securities managers.

Investment Summary - U.S. Equity

December 31, 2020 (unaudited)

Objective

The objective of U.S. Equity is to generate returns through capital appreciation and income from dividend payments that meet or exceed the Russell 3000 Index over 5-year periods (annualized, net of fees).

Structure

U.S. Equity investments are traditional equity investments made in the form of separate accounts and commingled funds. U.S. Equity contributes to a higher expected long-term return to the fund and is also a material contributor to volatility.

U.S. Equity

($ millions)

Manager	Investment Style	Market Exposure as of 12/31/20[1/]
Emerald Asset Management	Small-cap growth	$1,002.5
Mellon Investments Corporation Russell 1000	Russell 1000 Index	7,060.1
Mellon Investments Corporation Russell 2000 Core	Russell 2000 Core	181.2
Mellon Investments Corporation Russell 2000 Value	Russell 2000 Value	650.6
Total U.S. Equity		**$8,894.4**

[1/]Includes securities and cash, which the manager had available for investment.

Investment Summary - International Developed Markets Equity

December 31, 2020 (unaudited)

Objective

The objective of International Developed Markets Equity is to generate returns through capital appreciation and income from dividend payments that meet or exceed the MSCI World ex U.S. Index over 5-year periods (annualized, net of fees).

Structure

International Developed Markets Equity investments are traditional equity investments made in the form of separate accounts and commingled funds. International Developed Markets Equity contributes to a higher expected long-term return to the fund and is also a material contributor to volatility.

International Developed Markets Equity

($ millions)

Manager	Investment Style	Market Exposure as of 12/31/20[1/]
Artisan Partners - Global ex U.S.	Global ex-U.S. growth	$0.8
BlackRock MSCI World ex U.S. Index	Developed ex-U.S. Index	3,489.0
Harris Associates	Small-cap value	192.7
Mellon Investments Corporation MSCI World ex U.S. Index	MSCI World ex-U.S. Index	5.3
Morgan Stanley Investment Management Limited-developed ex U.S.	EAFE value	0.9
Northern Trust - Equity	Transition	1.7
Templeton Investment Counsel - Global ex U.S.	Global ex-U.S. value	1.1
Walter Scott & Partners Limited	Global Growth	689.0
Xponance	International Small-cap	234.3
Total International Developed Markets Equity		**$4,614.8**

[1/]Includes securities and cash, which the manager had available for investment.

Investment Summary - Emerging Markets Equity

December 31, 2020 (unaudited)

Objective

The objective of Emerging Markets Equity is to generate returns through capital appreciation and income from dividend payments that exceed the MSCI Emerging Markets Index over 5-year periods (annualized, net of fees).

Structure

Emerging Markets Equity investments are traditional equity investments made in the form of commingled funds since there are legal challenges for SERS to use separate accounts to open sub-custodial trading accounts in certain emerging market countries. Emerging Markets Equity contributes to a higher expected long-term return to the fund and is also a material contributor to volatility.

Emerging markets are generally regarded as less efficient than developed markets and historically have been more volatile than developed markets. Returns have been influenced by capital flows into and out of these markets; however, longer term, emerging markets can be attractive to those investors seeking to access the financial returns derived from rapidly expanding economies. Due to the high return volatility associated with emerging markets, the SERS Fund takes a diversified approach using a variety of investment strategies. The SERS Fund employs a structure diversified by investment advisor, style, and type.

Emerging Markets Equity

($ millions)

Manager	Investment Style	Market Exposure as of 12/31/20[1/]
BlackRock MSCI Emerging Markets Index	MSCI Emerging Markets Index	$14.5
GlobeFlex Capital	Small-cap - GARP	112.7
Leading Edge Investment Advisors	Emerging Markets	279.7
Macquarie Emerging Markets	Mid/large cap value	563.4
Martin Currie Investment Management	All-cap	625.1
Total Emerging Markets Equity		**$1,595.4**

[1/]Includes securities and cash, which the manager had available for investment.

Investment Summary - Fixed Income

December 31, 2020 (unaudited)

Objective

The objective of Fixed Income is to provide liquidity to minimize capital impairment risk, reduce volatility of the total fund, and contribute total return to the fund that meet or exceed its benchmark (Bloomberg Barclays U.S. Aggregate Bond Index) over 5-year periods (annualized, net of fees). Fixed Income should also provide diversification and low correlation with equity markets.

Structure

Fixed Income investments are traditional investments made in the form of separate accounts and commingled funds. They include investments in publicly traded debt obligations of sovereign, quasi-sovereign and corporate entities. The asset class generates current income and the repayment of principal at maturity.

SERS 2019 Investment Policy Statement
Fixed Income Structure

Strategy	Description
Opportunistic Fixed Income	Investments in sovereign debt, commercial and residential non-agency mortgage-backed securities, asset-backed securities, credit strategies, and high yield debt, which seek to provide excess return when performance conditions are favorable, and offer varying potential return with a corresponding variance in expected risk.
Core Fixed Income	Investments in intermediate duration investment grade bonds of various types (e.g. agency government bonds, corporate bonds, agency-mortgage backed securities), which provide capital loss protection in difficult market conditions, and offer risk mitigation due to low correlation with equity.
Nominal U.S. Treasuries	Investments in securities matching the risk and return profile of 10-year U.S. Treasury Notes.

Investment Summary - Fixed Income

December 31, 2020 (unaudited)

The SERS Board adopted on December 1, 2020, the amended *SERS Defined Benefit Plan Investment Policy Statement*. The newly adopted IPS redefines the fixed income allocations within the portfolio moving towards a liability-driven or cash flow-driven investment strategy. During 2021, the Fixed Income Portfolio will be transitioning as outlined below.

Redefined Objective

The objective of the Fixed Income allocation is to provide liquidity to minimize capital impairment risk, diversify investment risk, and enhance return and income to meet the fund's obligations. It is expected that the returns from the Fixed Income allocation will meet or exceed its benchmark performance over 5-year periods (annualized, net of fees).

Redefined Structure

Fixed Income investments are traditional investments made in the form of separate accounts and commingled funds. They include investments in publicly traded debt obligations of sovereign, quasi-sovereign and corporate entities and securitized assets.

SERS 2020 Investment Policy Statement
Fixed Income Structure

Strategy	Description	% of Fixed Income Target	Allocation Range
Intermediate Treasury	Investments in intermediate duration U.S. Treasury bonds as benchmarked by the Bloomberg Barclays U.S. Intermediate Treasury Index.	5%	0% to 10%
Long Duration (Treasury and Credit)	Investments in U.S. Treasury bonds and U.S. investment grade corporate and other bonds with durations equal to or greater than ten years. The benchmark for this allocation is a combination of 50% Bloomberg Barclays U.S. Long Treasury Index and 50% Bloomberg Barclays U.S. Long Credit Index.	30%	20% to 40%
Securitized	Investments in U.S. investment grade residential mortgage-backed securities, commercial mortgage-backed securities, and other asset-backed securities as benchmarked by the Bloomberg Barclays U.S. Securitized Index.	15%	10% to 20%
Intermediate Credit	Investments in intermediate duration U.S. investment grade corporate and other bonds as benchmarked by the Bloomberg Barclays U.S. Intermediate Credit Index.	35%	25% to 45%
High Yield	Investments in U.S. below investment grade fixed income securities to generate higher returns than the other elements of the fixed income portfolio as benchmarked by the Bloomberg Barclays U.S. Corporate High Yield Index or similar index.	15%	10% to 20%

Investment Summary - Fixed Income

December 31, 2020 (unaudited)

Fixed Income

($ millions)

Manager	Investment Style	Market Exposure as of 12/31/20[1/]
Core Fixed Income		
Mellon Investments Corporation Bond Index	Bloomberg Barclays U.S. Aggregate	$5,414.9
PIMCO Core	Bloomberg Barclays U.S. Aggregate ex. Treasuries	722.3
Taplin, Canida & Habacht (TCH)	U.S. Credit	226.7
Total Core Fixed Income		**6,363.9**
Nominal U.S. Treasuries		
Mellon Investments Corporation Long Duration Bond Index	U.S. Long Treasuries	351.0
PIMCO U.S. Treasuries	U.S. Treasuries	692.9
Total Nominal U.S. Treasuries		**1,043.9**
Opportunistic Fixed Income		
Blackstone Keystone	Fund-of-Funds	995.2
Brandywine Global	Global Sovereign Credit	224.6
Eaton Vance	Global Macro Strategy	225.1
Fidelity Institutional Asset Management	Commercial Mortgage-Backed Securities	322.1
SEI Structured Credit Fund	High Yield Bank Loans	124.2
Stone Harbor EMD	Emerging Market Debt	180.6
Stone Harbor HY	Global High Yield	218.1
Total Opportunistic Fixed Income		**2,289.9**
Total Fixed Income		**$9,697.7**

[1/]Includes securities and cash, which the manager had available for investment.

Investment Summary - Inflation Protection (TIPS)

December 31, 2020 (unaudited)

Objective

The objective of Inflation Protection is to protect against both expected and unexpected higher inflation, provide liquidity to minimize capital impairment risk, reduce volatility of the total fund, and contribute total return to the fund that meet or exceed its benchmark (Bloomberg Barclays U.S. TIPS Index) over 5-year periods (annualized, net of fees).

Structure

Treasury Inflation-Protected Securities (TIPS) are traditional investments made in the form of separate accounts and commingled funds. The primary advantage of TIPS is that their return offers protection against both expected and unexpected higher inflation, as the securities' coupon payments are directly tied to the rate of inflation. TIPS, therefore, maintain the purchasing power of the investor. The coupon payments of TIPS have two components: a real coupon rate that is established at the issuance of the bond, and an accrual equal to the rate of inflation which adds to the principal balance of the security. TIPS are also useful for hedging liabilities which are affected by inflation and for hedging a cash flow stream against the need to liquidate equities and conventional bonds at depressed prices, in order to meet pension obligations during periods of unexpected inflation.

Inflation Protection (TIPS)

($ millions)

Manager	Investment Style	Market Exposure as of 12/31/20[1/]
Brown Brothers Harriman	U.S. TIPS	$576.5
New Century Advisors	Global TIPS	137.5
NISA Investment Advisors	U.S. TIPS	578.0
Total Inflation Protection (TIPS)		**$1,292.0**

[1/]Includes securities and cash, which the manager had available for investment.

Investment Summary - Cash

December 31, 2020 (unaudited)

Objective

The objective of Cash is to serve as the primary source of liquidity and generate returns that meet or exceed its benchmark (ICE BofAML U.S. 3-Month Treasury Bill Index) over a three-year period.

Structure

Cash investments emphasize the use of higher credit quality debt instruments that are liquid and have short maturities and durations, or have floating rates and have historically been invested in the Pennsylvania Treasury Group Investment Fund, a short-term investment fund.

Cash

($ millions)

Manager	Investment Style	Market Exposure as of 12/31/20[1/]
PA State Treasury (STIF)	Cash	$540.0
Total Cash		**$540.0**

[1/]Includes securities and cash, which the manager had available for investment.

Investment Summary - Legacy Hedge Funds

December 31, 2020 (unaudited)

Objective

SERS will continue to work with existing legacy managers as well as explore options to work with strategic partners to expedite the redemption process in a thoughtful and cost-effective way.

Structure

The current structure of this portfolio consists of legacy investments that will continue to decrease over time as investments are realized, liquidated, and redeemed.

Status

SERS is no longer actively investing in this strategy; legacy hedge fund portfolios are currently in liquidation. The remaining balance has continued to decrease as SERS has successfully redeemed assets from legacy managers.

Legacy Hedge Funds

($ millions)

Manager	Investment Style	Market Exposure as of 12/31/20[1/]
Arden	Fund-of-Funds	$3.2
Entrust Keystone	Fund-of-Funds	3.6
Legacy Hedge Funds	Fund-of-Funds	10.3
Luxor Capital Partners	Direct Hedge Fund	1.6
Morgan Stanley Alternative Investment Partners	Fund-of-Funds	1.3
PAAMCO	Fund-of-Funds	3.8
Pine River Fund	Direct Hedge Fund	0.3
Robeco Investment	Fund-of-Funds	0.1
Total Legacy Hedge Funds		**$24.2**

[1/]Includes securities and cash, which the manager had available for investment.

Defined Contribution Plan Investment Options

December 31, 2020 (unaudited)

Investment Policy

The SERS Board originally adopted the 401(a) Defined Contribution Plan (Defined Contribution Plan) Investment Policy Statement (DC IPS) on June 13, 2018, and amended the policy on December 2, 2020.

The purpose of the DC IPS is to formalize the board's investment objectives and policies, and to define the duties and responsibilities of the various individuals and entities involved in the investment process.

The purpose of the Defined Contribution Plan is to provide eligible employees ("employees") with a source of retirement income from accumulated employee contributions, employer contributions, and investment returns. The objective of the Defined Contribution Plan is to allow employees to defer a portion of their salary into the plan, promote and maximize capital accumulation, and enable employees to meet their personal retirement investment goals. It is the board's intent to make available an array of low-cost investment options that satisfy the following criteria:

- Each investment option is diversified within itself
- Each investment option has different risk and return and/or style characteristics; and
- Each investment option, in combination with the other available investment options, contributes to the diversification opportunities of a participant's portfolio

The board has delegated certain responsibilities related to the effective management of the Defined Contribution Plan. Various responsibilities are allocated among the board, agency staff, investment managers, Investment Consultant, Custodian/Sub-custodian, and the Third-Party Administrator. All persons who act as agents of the board are expected to adhere to the highest standards of professional integrity and honesty. The responsibilities of the Defined Contribution Plan's service providers are governed by the applicable service agreements, as well as the DC IPS.

The board employs an investment staff and investment consultant, which are responsible to the board to review and analyze the current investment climate, and to recommend adjustments with respect to the policy that are appropriate to take optimum advantage of new conditions and strategies as they arise in the market place.

Investment Options

It is the board's intent to offer a broad range of investment options with materially different risk and return characteristics to allow participants, by choosing among such investment options, the opportunity to diversify their balances and construct portfolios consistent with their unique circumstances, goals, time horizons, and tolerance for risk. It is the objective of the board to offer investment options at a reasonable cost in terms of management, custody, other costs, and have investment characteristics that can be successfully communicated to participants. Further, it is the intent of the board to designate names for the investment options that are easily understood by participants. The Defined Contribution Plan is required to offer a minimum of ten investment options that are professionally managed by at least three investment managers. The board offers three tiers of investment options to meet various participant investment objectives. Described below are the various types of investment options. The board selects available investment options and investment managers and adds or removes such options or investment managers at any time in its discretion.

Target Date Fund Investment Options

Target date funds provide a series of asset allocation funds that allow participants to choose a single fund that is based on their expected target retirement date. Each target date fund includes a professionally managed portfolio of underlying investments that may include fixed income, equity and alternative asset classes. BlackRock, the investment manager, adjusts and rebalances the allocation of assets over time to reduce the expected risk as each fund progresses toward its target date. The board recognizes that some participants may fail to make investment choices for their plan account.

Defined Contribution Plan Investment Options

December 31, 2020 (unaudited)

Therefore, the board believes it is appropriate to designate a target date fund based on the participant's age as the default investment option for any participant who fails to make an investment choice for his or her contributions.

Asset Class Investment Options

Additional investment options that match participants' unique investment goals, investor profile, and risk tolerance are also available. The additional investment options provide a broad exposure to major asset classes including stocks, bonds, and capital preservation investments. The Short-Term Investment Fund is managed by the Commonwealth of Pennsylvania Treasury Department. The other funds are managed by Mellon Investments Corporation.

Self-Directed Brokerage Option

The self-directed brokerage option provides access to a brokerage window for participants who seek greater investment flexibility. This investment option is offered through the Charles Schwab Corporation. Participants investing in this option do so at their own risk. The board is not responsible for the monitoring or evaluation of any self-directed brokerage account investments.

Defined Contribution Plan Investment Options, Returns, and Expenses

Participation, Assets, Performance, and Fund Expense

As of December 31, 2020

Fund Name	Participants	Fund Balance	Inception Date	Estimated Calendar Year, Net-of-Fees Returns				Max Total Investment Fund Expense[2/]
				1 Year	3 Year	5 Year	10 Year	
Post Retirement Date Fund	322	$563,163	08-2005	11.97%	7.72%	7.88%	6.25%	0.0775%
2025 Retirement Date Fund	648	1,458,663	07-2006	12.19	8.17	9.12	7.37	0.0775
2030 Retirement Date Fund	1,041	3,399,905	08-2005	12.88	8.74	9.95	7.94	0.0775
2035 Retirement Date Fund	1,267	3,259,859	07-2006	13.57	9.27	10.73	8.47	0.0775
2040 Retirement Date Fund	1,224	3,183,599	08-2005	14.14	9.71	11.41	8.92	0.0775
2045 Retirement Date Fund	1,245	4,345,437	07-2006	14.83	10.08	11.90	9.28	0.0775
2050 Retirement Date Fund	1,472	4,439,865	09-2007	15.20	10.25	12.09	9.49	0.0775
2055 Retirement Date Fund	1,703	4,184,167	05-2010	15.32	10.30	12.11	9.62	0.0775
2060 Retirement Date Fund	2,064	4,250,866	11-2014	15.31	10.29	12.10	NA	0.0775
2065 Retirement Date Fund	1,823	2,359,357	09-2019	15.14	NA	NA	NA	0.0775
U.S. Large Company Stock Index Fund	436	1,371,187	12-1994	18.43	14.19	15.23	13.90	0.0150
U.S. Small/Mid Company Stock Index Fund	115	298,840	08-1998	32.03	15.35	16.06	13.23	0.0250
U.S. All Company Stock Index Fund	313	456,557	01-2011	21.20	14.43	15.38	13.51	0.0250
Global Non-U.S. Stock Index Fund	311	717,483	03-2009	11.15	5.25	9.35	5.15	0.0550
U.S. Bond Index Fund	281	317,580	02-1995	7.56	5.35	4.43	3.80	0.0250
U.S. Short-Term Bond Index Fund	152	52,576	12-2017	3.36	2.98	NA	NA	0.0250
U.S. Treasury Inflation Protected Security Index Fund[1/]	190	79,488	07-2007	11.00	5.91	NA	NA	0.0250
Short-Term Investment Fund	24	939,153	10-2018	0.65	1.67	1.34	0.77	0.0000

[1/]There was a break in the return history of the TIPS fund between 2010 and 2017, since there were no participants during that time.

[2/]Maximum possible expense that can be charged.

The Plan's annual recordkeeping fee is $59.50 per participant. The Plan's employers are currently covering this fee.

For those in the Self-Directed Brokerage Option (SDB), the asset fee is assessed against the balance in the SDB but the actual deduction is prorated against the core investment options separately.

Actuarial Section

pennsylvania
STATE EMPLOYEES' RETIREMENT SYSTEM

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May 18, 2021

Ms. Terrill J. Sanchez
Executive Director
State Employees' Retirement System
30 North Third Street - Suite 150
Harrisburg, PA 17101-1716

Dear Ms. Sanchez:

The purpose of this letter is to certify the actuarial adequacy of the contributions being made by the Commonwealth of Pennsylvania and other participating agencies to the Pennsylvania State Employees' Retirement System (SERS), and to discuss the approach currently being taken toward meeting the financing objectives of the plan. The results provided herein are based upon the December 31, 2020 annual actuarial valuation for funding purposes.

The funding objective of the plan is set forth in the State Employees' Retirement Code (SERC). The annual employer contribution is equal to the sum of the following for the commonwealth fiscal year beginning July 1, 2021:

(1) The employer share of the normal cost.
(2) The fresh start amortization of the December 31, 2009 unfunded liability over a 30-year period beginning July 1, 2010 and ending on June 30, 2040.
(3) The amortization of the change in liability due to Act 2010-120 (Act 120) over a 30-year period beginning July 1, 2011 and ending on June 30, 2041.
(4) The amortization of changes in liability due to actual experience differing from assumed experience after December 31, 2009 over 30-year periods beginning with the July following the actuarial funding valuation determining such changes.
(5) The extra contribution to return Act 2017-5 savings.
(6) The amortization of legislated benefit changes, including cost-of-living increases, over 10-year periods beginning with the July following the actuarial funding valuation determining such changes. (Note: There are currently no 10-year amortizations being funded.)

The amortization payments are level dollar amounts over the remaining applicable amortization periods. The employer cost is determined as a percent of retirement covered compensation. The total employer cost is the average contribution amount that needs to be received from the employer groups participating in the system. Some employer groups contribute a higher percent of compensation and others contribute a lower percent of compensation, depending on the benefits payable to each group's employees.

Ms. Terrill J. Sanchez
May 18, 2021

The actuarial funding valuation is based on financial and participant data, which is prepared by SERS staff. We rely on that data and ensure that it is reviewed for internal and year-to-year consistency as well as general reasonableness prior to being used in the actuarial funding valuation.

The actuarial valuation uses various economic and demographic assumptions regarding future plan experience. These assumptions were adopted by the State Employees' Retirement Board (the Board) in July of 2020 based upon the recommendations included in our July 2020 report on the nineteenth investigation of actuarial experience of SERS, covering the years 2015 through 2019. Most notably, regarding economic assumptions, the Board approved a reduction in the annual investment return assumption from 7.125% to 7.000% and a reduction in the inflation assumption from 2.60% to 2.50%. These changes, and many others, to both the economic and demographic assumptions, were implemented with the December 31, 2020 actuarial valuation. To ensure that the investment return assumption remains up-to-date and appropriate for every actuarial valuation, it is reviewed annually by the SERS actuaries and Board. We will continue to closely monitor the investment return assumption and will recommend changing it if conditions warrant such change. The actuarial value of assets is developed by recognizing the difference between the expected actuarial value of assets and the market value of assets over a five-year period.

Governmental Accounting Standards Board (GASB) Statement No. 67, *Financial Reporting for Pension Plans*, replaced the requirements of GASB Statement No. 25, *Financial Reporting for Defined Benefit Pension Plans and Note Disclosures for Defined Contribution Plans*, effective for financial statements for fiscal years ending on or after June 30, 2014. GASB Statement No. 68, *Accounting and Financial Reporting for Pensions*, replaced the requirements of GASB Statement No. 27, *Accounting for Pensions by State and Local Governmental Employers*, effective for fiscal years ending on or after June 30, 2015. GASB 67 is designed for financial reporting by pension plans and GASB 68 is designed for financial reporting by entities that participate in pension plans. The objective of both statements is to provide more useful, transparent, and comparable financial information related to pensions. The Financial Section now includes new schedules in response to the reporting requirements of GASB Statement No. 67. Although two schedules that were required disclosures under Statement No. 25 were discontinued, namely the "Schedule of Funding Progress" and the "Schedule of Employer Contributions," these schedules remain of interest and, therefore, have been updated to reflect the December 31, 2020 actuarial funding valuation and are included herein.

GASB Statement No. 25, although it has been replaced by GASB Statement No. 67, established the Annual Required Contribution (ARC), which was recognized for many years as the minimum annual contribution required by GASB. How a pension plan's actual contributions compare to the ARC is likely to remain of interest despite the fact that GASB

has discontinued the ARC. For SERS, the scheduled contributions from July 1, 2005 through June 30, 2015 were below the minimum amount required to meet the GASB No. 25 minimum. Originally this was a result of financing changes implemented by Act 2003-40 in December 2003. Later, this became a consequence of the contribution collars required under Act 2010-120. After June 30, 2015, because employer contributions are being made in accordance with current law, they are exceeding the GASB No. 25 minimum.

The following schedules were prepared by us, Korn Ferry, from the December 31, 2020 actuarial funding valuation: "Schedules of Active Member Valuation Data", "Solvency Test", "Analysis of Financial Experience", "Schedule of Funding Progress", "Schedule of Contributions Under Previous Reporting Standards", and "History and Projection of Contribution Rates and Funded Ratios".

Based upon the valuation results, it is our opinion that, provided future employer contributions are made in accordance with current law, the Pennsylvania State Employees' Retirement System is, and will continue to be, adequately funded, in accordance with generally accepted actuarial principles and procedures.

It should be noted that, during June of 2017, Governor Tom Wolf signed into law Act 2017-5. Act 2017-5 fundamentally changed retirement options for most new hires beginning January 1, 2019. This legislation introduced two new hybrid defined benefit (DB)/defined contribution (DC) options and a straight DC option. New classes of service now apply to most State employees who first become SERS members on or after January 1, 2019; however, most hazardous duty employees are exempt from the new plan design.

In April 2020, SERS received an advance payment of $1.061 billion from the Pennsylvania State University (PSU). The advance payment was part of a funding agreement under Act 2019-105 that reduced PSU's allocated share of the unfunded liability and created a schedule of setoff amounts that reduces the future contributions due from PSU. This arrangement accelerated the funding of SERS but is not expected to increase the long-term funded status of SERS since the future contributions from PSU will be reduced by the value of the advance payment.

To ensure the expected benefit of the advance payment is allocated to PSU, the value of the future setoff amounts is added to the unfunded liability to determine the Amortization Liability. The Amortization Liability is used to determine the amortization payments due from all employers, prior to recognizing any setoff amounts. This allows the effect of the advance payment to be allocated only to PSU and have no expected effect on the contributions due from the other employers.

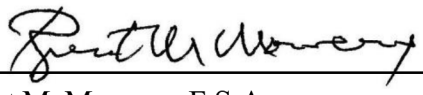
Ms. Terrill J. Sanchez
May 18, 2021

Actuarial Certification

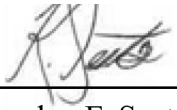
To the best of our knowledge, this report is complete and accurate and all costs and liabilities have been determined on the basis of actuarial assumptions and methods which are reasonable (taking into account the past experience of SERS and reasonable expectations) and which represent our best estimate of anticipated experience under the plan. The report, costs, liabilities, assumptions, and methods used for funding purposes are in accordance with the parameters set by Actuarial Standards of Practice.

The actuaries certifying to this valuation are members of the Society of Actuaries or other professional actuarial organizations and meet the Qualification Standards of the American Academy of Actuaries for purposes of issuing Statements of Actuarial Opinion.

Respectfully submitted,
Korn Ferry

By 

Brent M. Mowery, F.S.A.
Member American Academy of Actuaries
Enrolled Actuary No. 20-3885

By 

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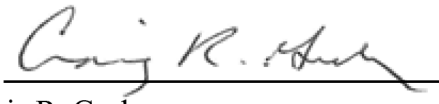
By 

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Summary of Actuarial Assumptions and Methods

December 31, 2020 (unaudited)

The Actuarial Section of SERS' Annual Comprehensive Financial Report presents information on the Defined Benefit Plan, unless noted otherwise. The schedules in this section are reported in accordance with SERS' actuarial funding valuation based on statutory requirements. For funding purposes, actuarial methods are specified by statute while actuarial assumptions are recommended by SERS' actuary and approved by the SERS Board, as trustees of the State Employees' Retirement Fund. The State Employees' Retirement Code (retirement code), legislated by the General Assembly and signed into law by the Governor, establishes funding policy. The retirement code is administered by the SERS Board. The General Assembly, along with the Governor's signing, has the authority to amend the retirement code. The Financial Section, except where noted, is reported in accordance with a separate actuarial accounting valuation based on Governmental Accounting Standards Board Statement No. 67 (GASB 67).

For funding purposes, a variation of the entry-age normal actuarial cost method, which is used to determine the liabilities and costs related to SERS benefits, is based on the benefits and contributions for new members rather than for all current members from their date of entry under the entry-age actuarial cost method for financial reporting purposes under GASB 67. Ultimately, this variation for funding purposes should produce approximately the same results as the typical entry-age method over the long run. For funding purposes, a five-year smoothed market value is used as the asset valuation method compared to fair (market) value for financial reporting purposes.

SERS uses amortization periods of 10 years and 30 years with level payments over closed periods. The current amortization schedules are as follows:

(1) Act 2010-120 established a fresh start amortization of the December 31, 2009 unfunded liability over a 30-year period beginning July 1, 2010, and ending June 30, 2040.

(2) The amortization of the change in liability due to Act 2010-120 over a 30-year period beginning July 1, 2011, and ending on June 30, 2041.

(3) The amortization of changes in liability due to actual experience differing from assumed experience after December 31, 2009, over 30-year periods beginning with the July 1 following the actuarial valuation determining such changes.

Every five years, SERS is required to conduct an actuarial experience study to determine whether the assumptions used in its annual actuarial valuations remain accurate based on current and anticipated demographic trends and economic conditions. The *19th Investigation of Actuarial Experience* study for the period 2015 – 2019 was released and approved by the SERS Board in July 2020.

The actuary, under oversight of the SERS Board, reviewed economic assumptions (such as the assumed future investment returns and salary increases) as well as demographic assumptions (such as employee turnover, retirement, disability, and death rates). Some assumption adjustments increased projected cost and some decreased projected cost, but the overall result was a slight increase to the net pension liability. The changes in assumptions were effective with the December 31, 2020, valuation.

The actuary and SERS Board review the investment rate of return annually, in addition to the normal five-year experience study cycle, in recognition of changing market environments and a desire to provide an opportunity to ensure the assumption remains reasonable with each actuarial valuation.

The resulting actuarial methods and assumptions used for both funding purposes as well as financial reporting purposes include:

- The investment rate of return of 7.0% per year is based on an underlying rate of inflation of 2.5% per year.

Summary of Actuarial Assumptions and Methods

December 31, 2020 (unaudited)

- For current and future male non-disabled retirees, beneficiaries, and survivors, SERS uses the PubG-2010 Male Retiree Mortality Table, with post-2010 mortality improvement based on Scale MP-2019 for Males. For current and future female non-disabled retirees, beneficiaries, and survivors, SERS uses the PubG-2010 Female Retiree Mortality Table, set forward 1 year, with post-2010 mortality improvement based on Scale MP-2019 for Females. For current and future male disabled retirees, SERS uses the PubNS-2010 Male Disabled Retiree Mortality Table, set forward 2 years, with post-2010 mortality improvement based on Scale MP-2019 for Males. For current and future female disabled retirees, SERS uses the PubNS-2010 Female Disabled Retiree Mortality Table, set forward 2 years, with post-2010 mortality improvement based on Scale MP-2019 for Females. For all pre-retirement active members, the mortality is based on actual SERS experience.

- The rates for probability of retirement and the probabilities of withdrawal from active service, including death, before age and service retirements, which are presented in the **Schedules of Active Member Valuation Data**.

- The projected average salary increases of 4.6% with a range of 3.30% to 6.95%. This increase includes an underlying assumption of 2.5% for inflation. The general salary increase and annual rate of salary increase for promotions and longevity is presented in the **Schedules of Active Member Valuation Data**.

- No cost-of-living adjustments were used in the determination of actuarial valuations.

The most recent valuations were based on members of SERS as of December 31, 2020. All census and asset data was supplied by SERS and was subject to reasonable consistency checks. The actuarial computations were prepared by, or under the supervision of, a Member of the American Academy of Actuaries (M.A.A.A.).

Schedules of Active Member Valuation Data

December 31, 2020 (unaudited)

Withdrawal From Active Employment Before Age and Service Retirement[1/]

Annual Rate of Active Members Separating Within the Next Year

Sample Age	Male						Female					
	Withdrawal Years of Service				Death	Disability	Withdrawal Years of Service				Death	Disability
	0	5	9	14+			0	5	9	14+		
20	30.00%	NA	NA	NA	0.06%	NA	40.00%	NA	NA	NA	0.03%	NA
25	21.00	6.10%	3.00%	NA	0.06	0.01%	24.80	8.50%	2.40%	NA	0.03	0.02%
30	18.50	6.10	3.00	1.90%	0.07	0.03	21.30	7.70	2.30	2.90%	0.03	0.05
35	18.50	4.90	1.60	1.90	0.08	0.06	16.60	4.50	2.40	2.10	0.04	0.08
40	18.20	3.40	2.80	1.90	0.11	0.09	14.80	4.50	2.30	1.60	0.05	0.16
45	17.40	3.40	1.60	0.60	0.14	0.20	17.80	4.30	1.10	1.60	0.08	0.26
50	19.10	3.10	1.60	0.60	0.20	0.33	15.80	4.30	1.80	1.60	0.11	0.40
55	19.10	2.60	0.80	0.40	0.25	0.44	15.80	4.00	1.30	1.00	0.12	0.50
60	NA	NA	NA	NA	0.29	NA	NA	NA	NA	NA	0.19	NA

Annual Rate of Retirement with Full Benefits (Superannuation)[1/]

Class A-3 and A-4		Class A-5 and A-6		All Other Membership Classes		
					Rate	
Sample Age	Rate	Sample Age	Rate	Sample Age	Male	Female
55	15.0%	55	15.0%	53-54	15.0%	23.0%
56	16.0	56	16.0	55-57	20.0	23.0
57	17.0	57	17.0	58	25.0	23.0
58	18.0	58	18.0	59	25.0	28.0
59	19.0	59	19.0	60	20.0	23.0
60	20.0	60	20.0	61-64	20.0	20.0
61	20.0	61	20.0	65-67	26.0	26.0
62	25.0	62	25.0	68-70	23.0	23.0
63	20.0	63	20.0	71-79	20.0	20.0
64	20.0	64	20.0	80	100.0	100.0
65	25.0	65	25.0			
66-79	20.0	66-79	20.0			
80	100.0	80	100.0			

[1/]The assumptions presented in the above tables were based on a review of SERS experience from 2015 – 2019. The rates are the probabilities that an event will occur in the year after the valuation. For instance, the male retirement rate of 20% at age 60 means that 200 of every 1,000 male employees age 60 and eligible for full benefits are expected to retire before they reach age 61.

Schedules of Active Member Valuation Data

December 31, 2020 (unaudited)

Annual Rate of Salary Increase[1/]

Completed Years of Service	Career Salary Increase	Completed Years of Service	Career Salary Increase
1	4.15%	16	1.25%
2	3.25	17	1.20
3	2.90	18	1.15
4	2.70	19	1.15
5	2.50	20	1.10
6	2.35	21	1.00
7	2.15	22	0.95
8	2.10	23	0.90
9	2.00	24	0.85
10	1.60	25	0.80
11	1.55	26	0.70
12	1.45	27	0.60
13	1.40	28	0.50
14	1.35	29	0.50
15	1.30	30+	0.50

[1/]In addition, it is assumed that salaries will increase by 2.8% per year, which includes inflation. The table above does not include that general salary increase. It is assumed that only the general salary increase is applicable to classes D and E.

Reduced Benefits

Class A-3 and A-4

10 or More Years of Service

Sample Age	Rate
35	1.50%
40	1.50
45	1.50
50	2.00
55	5.50
60	5.50
61	6.00
62	20.00
63	10.00
64	15.00
65	N/A

Class A-5 and A-6

10 or More Years of Service

Sample Age	Rate
35	1.50%
40	1.50
45	1.50
50	2.00
55	5.50
60	5.50
61	6.00
62	8.00
63	10.00
64	10.00
65	15.00
66	20.00
67	N/A

All Other Membership Classes

Sample Age	5 - 14 Years of Service		15 or More Years of Service	
	Male	Female	Male	Female
25	2.20%	4.00%	NA	NA
30	2.20	2.00	NA	NA
35	1.30	2.00	0.80%	1.40%
40	1.00	1.40	0.60	1.30
45	1.00	1.40	0.60	1.30
50	1.00	1.40	1.10	1.60
55	2.00	2.30	5.00	4.50

Schedules of Active Member Valuation Data

December 31, 2020 (unaudited)

Active Members by Age and Years of Service - Male

Age Group	Years of Service							Total	Average Salary
	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30+		
< 20	21	NA	NA	NA	NA	NA	NA	21	$30,994
20 - 24	1,108	7	NA	NA	NA	NA	NA	1,115	38,951
25 - 29	3,475	652	4	NA	NA	NA	NA	4,131	50,832
30 - 34	2,994	2,685	548	7	NA	NA	NA	6,234	59,046
35 - 39	2,018	2,003	2,210	688	10	NA	NA	6,929	65,756
40 - 44	1,534	1,442	1,660	1,816	539	8	NA	6,999	69,673
45 - 49	1,372	1,181	1,347	1,623	1,601	520	11	7,655	74,425
50 - 54	1,299	1,075	1,226	1,417	1,565	1,389	456	8,427	75,586
55 - 59	1,164	1,024	1,040	1,276	965	885	1,158	7,512	72,303
60 - 64	850	827	844	971	593	378	596	5,059	69,273
65+	526	514	564	585	281	189	328	2,987	74,365
Total	**16,361**	**11,410**	**9,443**	**8,383**	**5,554**	**3,369**	**2,549**	**57,069**	**$68,125**

Average Age: 46.11

Average Service: 11.57

Active Members by Age and Years of Service - Female

Age Group	Years of Service							Total	Average Salary
	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30+		
< 20	13	NA	NA	NA	NA	NA	NA	13	$28,849
20 - 24	725	5	NA	NA	NA	NA	NA	730	35,551
25 - 29	2,276	477	5	NA	NA	NA	NA	2,758	43,574
30 - 34	2,173	1,532	387	18	NA	NA	NA	4,110	50,269
35 - 39	1,881	1,425	1,302	449	29	NA	NA	5,086	55,430
40 - 44	1,626	1,214	1,131	1,169	372	18	NA	5,530	59,686
45 - 49	1,424	1,065	1,076	1,030	748	343	22	5,708	61,407
50 - 54	1,416	1,095	1,131	1,121	818	741	504	6,826	62,893
55 - 59	1,129	974	1,119	1,055	768	627	829	6,501	62,180
60 - 64	713	818	911	945	473	333	402	4,595	61,341
65+	283	390	413	441	207	117	185	2,036	60,303
Total	**13,659**	**8,995**	**7,475**	**6,228**	**3,415**	**2,179**	**1,942**	**43,893**	**$58,182**

Average Age: 46.93

Average Service: 10.90

Schedules of Active Member Valuation Data

December 31, 2020 (unaudited)

Aggregate Active Member Valuation Data

Valuation Year Ended Dec 31	Number of Employers	Number of Active Members	Covered-Employee Payroll	Annual Average Pay	% Increase/(Decrease) in Average Pay
2020	102[1/]	100,962	$6,441,578,000	$63,802	3.7%
2019	102[1/]	102,850	6,328,566,000	61,532	2.6
2018	102[1/]	103,007	6,178,000,000	59,984	3.2
2017	102[1/]	102,978	5,984,000,000	58,113	2.9
2016	103[2/]	104,632	5,912,000,000	56,499	(0.6)
2015	104[3/]	105,025	5,972,000,000	56,858	3.8
2014	104[3/]	104,431	5,720,000,000	54,769	2.9
2013	104	105,186	5,598,000,000	53,224	1.9
2012	105	106,048	5,539,000,000	52,230	0.1
2011	107	107,021	5,582,000,000	52,159	1.8

[1/]The membership includes 38 employers and the commonwealth is classified as its largest employer. The commonwealth comprises 65 agencies and when everything is evaluated separately, SERS has a total of 102 participating employers/agencies.

[2/]The membership includes 38 employers and the commonwealth is classified as its largest employer. The commonwealth comprises 66 agencies and when everything is evaluated separately, SERS has a total of 103 participating employers/agencies.

[3/]The membership includes 39 employers and the commonwealth is classified as its largest employer. The commonwealth comprises 66 agencies and when everything is evaluated separately, SERS has a total of 104 participating employers/agencies.

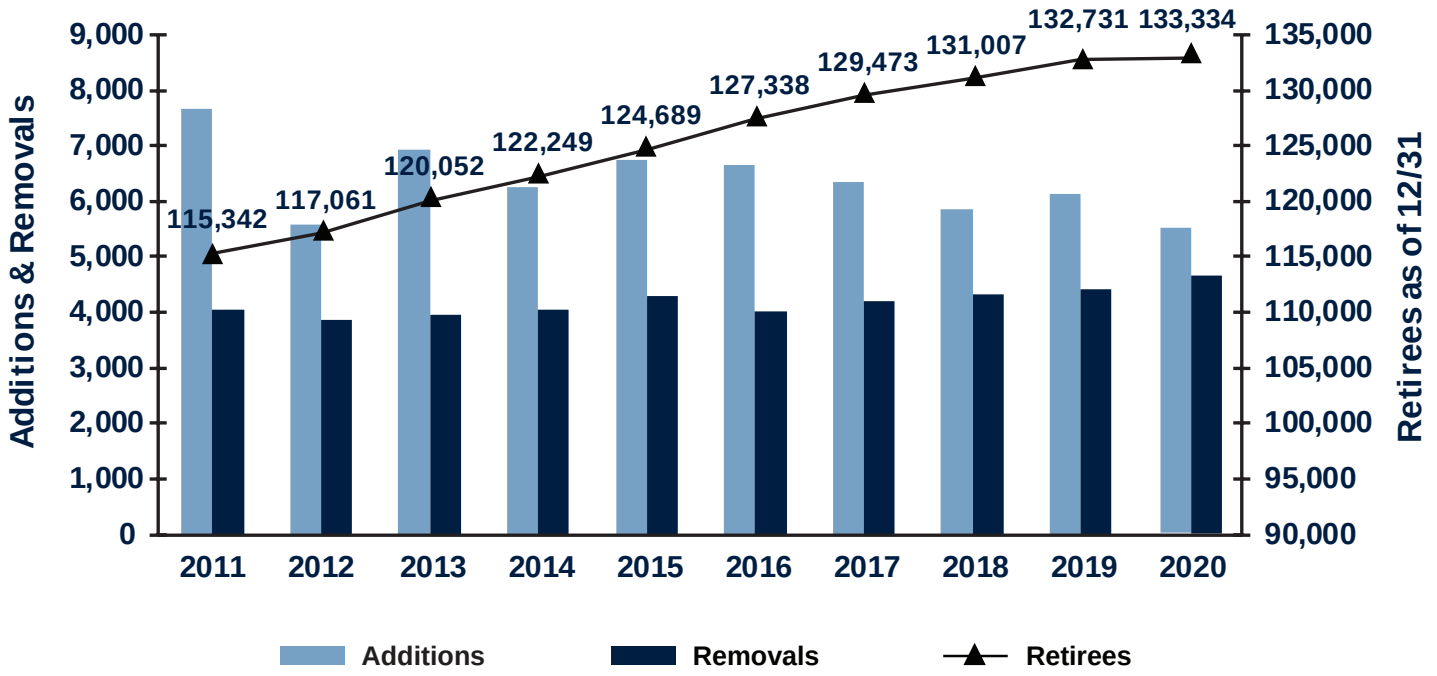
Schedule of Retirees and Beneficiaries Added to and Removed from Rolls

December 31, 2020 (unaudited)

Retirees and Beneficiaries Added to and Removed from Rolls

Year Ended	Added to Rolls		Removed from Rolls		Rolls - End of Year		Percentage Change	
	No.	Allowances	No.	Allowances	No.	Allowances[1/]	No.	Allowances
2020	5,363	$161,626,682	4,760	$79,668,921	133,334	$3,190,566,922	0.5%	2.6%
2019	6,132	176,664,651	4,408	72,004,815	132,731	3,108,945,258	1.3	3.5
2018	5,847	166,594,854	4,313	70,862,628	131,007	3,004,855,159	1.2	3.3
2017	6,338	178,317,205	4,203	63,576,892	129,473	2,909,267,596	1.7	4.1
2016	6,658	191,327,122	4,009	60,165,549	127,338	2,794,984,868	2.1	4.9
2015	6,743	175,810,502	4,303	63,027,188	124,689	2,664,418,763	2.0	4.4
2014	6,245	157,593,809	4,048	59,524,055	122,249	2,552,077,530	1.8	4.0
2013	6,944	178,392,487	3,953	53,186,262	120,052	2,454,388,693	2.6	5.4
2012	5,572	138,363,766	3,853	50,453,118	117,061	2,329,489,208	1.5	3.9
2011	7,669	205,521,876	4,040	50,132,667	115,342	2,241,716,566	3.3	7.4

[1/]Calculated by multiplying monthly benefit for December 31 by 12 to arrive at an annual amount.



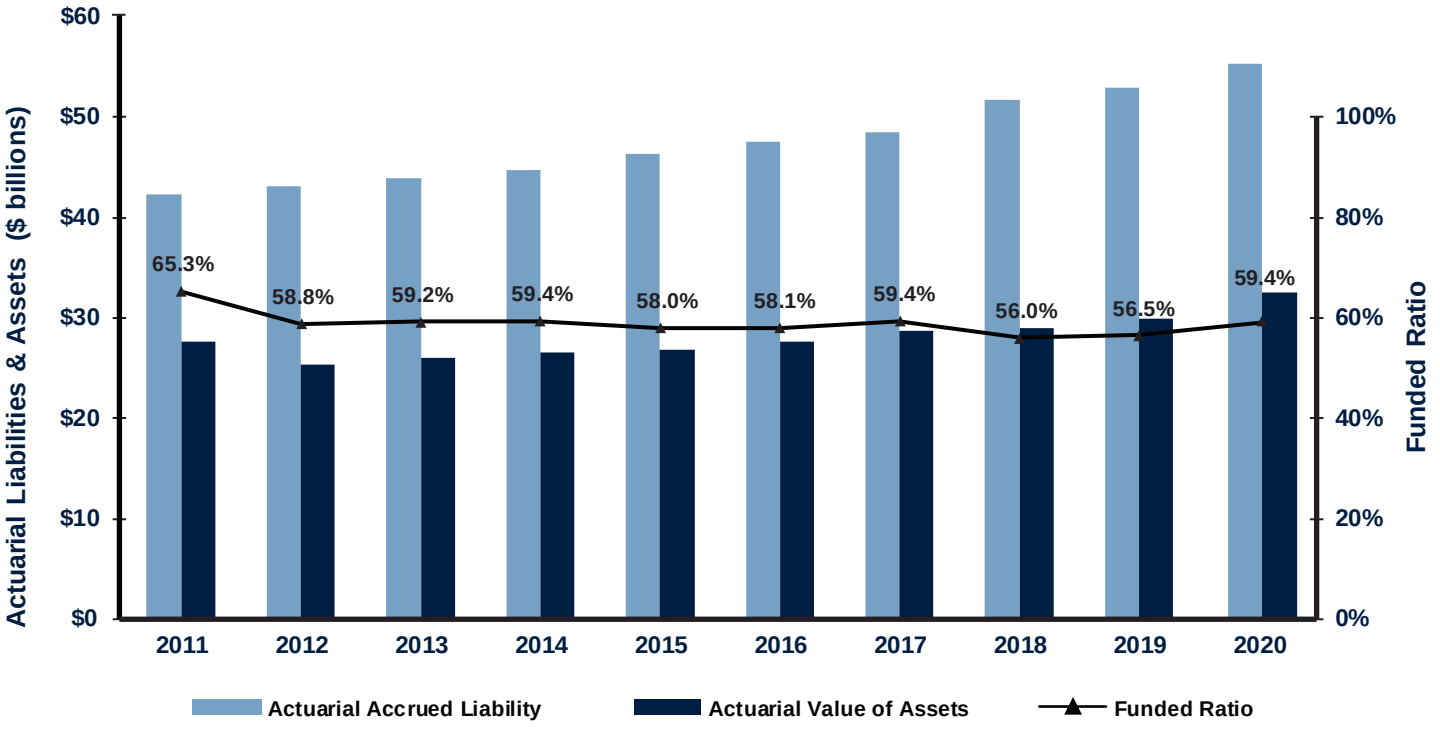
Solvency Test

December 31, 2020 (unaudited)

Fund Solvency[1/]

($ thousands)

Valuation Year Ended Dec 31	Actuarial Accrued Liabilities For (1) Active Member Contributions	(2) Retirees and Beneficiaries	(3) Active Members (Employer Financed Portion)	Total Actuarial Accrued Liability (AAL)	Actuarial Value of Assets	Portion of Accrued Liabilities Covered by Reported Assets (1)	(2)	(3)	Funded Ratio
2020	$5,327,815	$31,754,551	$18,016,392	$55,098,758	$32,703,275	100.0%	86.2%	0.0%	59.4%
2019	5,183,195	29,651,542	18,137,838	52,972,575	29,934,024	100.0	83.5	0.0	56.5
2018	5,074,760	28,558,283	18,149,162	51,782,205	28,989,607	100.0	83.7	0.0	56.0
2017	4,965,765	27,798,045	15,675,593	48,439,403	28,776,939	100.0	85.7	0.0	59.4
2016	4,869,229	26,824,306	15,825,429	47,518,964	27,596,048	100.0	84.7	0.0	58.1
2015	4,816,121	25,156,125	16,356,683	46,328,929	26,877,127	100.0	87.7	0.0	58.0
2014	4,733,833	23,872,658	16,144,179	44,750,670	26,584,948	100.0	91.5	0.0	59.4
2013	4,636,219	23,046,717	16,191,644	43,874,580	25,975,185	100.0	92.6	0.0	59.2
2012	4,551,507	22,095,052	16,409,005	43,055,564	25,302,688	100.0	93.9	0.0	58.8
2011	4,406,306	21,222,075	16,653,481	42,281,862	27,618,461	100.0	100.0	11.9	65.3



[1/]Based on statutory funding requirements.

Analysis of Financial Experience

December 31, 2020 (unaudited)

Gains and Losses in Accrued Liabilities[1/]

Resulting from Differences Between Assumed Experience and Actual Experience

($ thousands)

Type of Activity	2020	2019	2018	2017
Gain/(loss) from investment earnings[2/]	$625,338	($102,778)	($810,749)	$265,709
Changes in demographics of new entrants	58,259	191,167	0	(18,681)
Pay increases different than assumptions	(178,582)	(23,014)	(141,271)	(9,426)
Differences between actual and expected demographic experience	(63,639)	49,496	(134,609)	(144,105)
Gain/(loss) during year from financial experience	**441,376**	**114,871**	**(1,086,629)**	**93,497**
Non-recurring items				
Changes in demographic assumptions	(700,180)	0	0	0
Changes in economic assumptions[3/]	(599,077)	(749,930)	0	0
Loss due to collar restrictions[4/]	0	0	0	(140,438)
Benefit changes under Act 2017-5[5/]	0	0	(2,373,657)	0
Composite loss	**($857,881)**	**($635,059)**	**($3,460,286)**	**($46,941)**

[1/]Based on statutory funding requirements.

[2/]Net gains and losses from returns different than the assumed rate of return that are amortized over a five-year period.

[3/]2020 change primarily due to reduction of investment rate of return to 7.0% from 7.125%, which was approved by SERS Board at its July 2020 meeting, while 2019 change primarily due to reduction of investment rate of return to 7.125% from 7.25%, which was approved by SERS Board at its June 2019 meeting.

[4/]The Act 2010-120 cap on the growth of employer contributions of 4.5% was in place for commonwealth FY 2016-17. Collars were not needed thereafter.

[5/]2018 change primarily due to decrease in normal cost to 1.25% from 4.88% mandated by Act 2017-5 per actuarial valuation.

Schedule of Funding Progress

December 31, 2020 (unaudited)

Funding Progress[1/]

($ thousands)

Actuarial Valuation Year Ended December 31	Actuarial Value of Assets	Actuarial Accrued Liabilities (AAL)	Ratio of Assets to AAL	Unfunded Actuarial Accrued Liability (UAAL)	Covered Payroll	UAAL as a Percentage of Covered Payroll
2020	$32,703,275	$55,098,758	59.4%	$22,395,483	$6,441,578	347.7%
2019	29,934,024	52,972,575	56.5	23,038,551	6,328,566	364.0
2018	28,989,607	51,782,205	56.0	22,792,598	6,178,772	368.9
2017	28,776,939	48,439,403	59.4	19,662,464	5,984,361	328.6
2016	27,596,048	47,518,964	58.1	19,922,916	5,911,603	337.0
2015	26,877,127	46,328,929	58.0	19,451,802	5,971,511	325.7
2014	26,584,948	44,750,670	59.4	18,165,722	5,719,581	317.6
2013	25,975,185	43,874,580	59.2	17,899,395	5,598,420	319.7
2012	25,302,688	43,055,564	58.8	17,752,876	5,538,887	320.5
2011	27,618,461	42,281,862	65.3	14,663,401	5,582,108	262.7

[1/]Based on statutory funding requirements.

Schedule of Contributions Under Previous Reporting Standards

December 31, 2020 (unaudited)

Contributions Under Previous Reporting Standards[1/]

Annual Required Contributions Using Governmental Accounting Standards Board Statement No. 25

($ thousands)

Actuarial Valuation Year Ended December 31	Annual Required Contribution (ARC)	Actual Contribution	Actual Contribution as a Percentage of ARC
2020[2/]	$2,164,144	$3,174,854[3/]	146.7%
2019[2/]	2,106,138	2,106,138	100.0
2018[2/]	2,040,434	2,040,434	100.0
2017[2/]	1,883,541	1,883,541	100.0
2016[2/]	1,613,626	1,613,626	100.0
2015	1,469,116	1,359,246	92.5
2014	1,407,361	1,081,826	76.9
2013	1,314,925	790,996	60.2
2012	1,044,632	562,883	53.9
2011	913,778	391,189	42.8

[1/]The ARC is calculated as part of SERS funding valuation using Governmental Accounting Standards Board No. 25 (GASB 25) requirements. Starting in 2014 GASB 25 was superseded by Governmental Accounting Standards Board Statement No. 67 (GASB 67) for accounting purposes. GASB 67 replaces the ARC with an actuarially determined contribution (ADC). While no longer applicable to 2014 and subsequent years, this disclosure is being provided for informational purposes.

[2/]ARC excludes multiple service transfers made to SERS. These transfers are included as contributions on the Statements of Changes in Fiduciary Net Position.

[3/]Includes a one-time lump sum payment from Penn State University, less credits utilized during the year.

For developing the ARC, GASB 25 established a range of actuarial cost and amortization methods for the unfunded actuarial accrued liability. The scheduled contributions for the years shown above have been below the amount required to meet the GASB minimum under previous standards.

Underfunding of the ARC from 2011 through 2015 was the result of significant provisions of Act 2010-120, which capped increases in the employer contribution rate. The capped contribution rates during those years were below the respective years' ARC contribution rates.

History and Projection of Contribution Rates and Funded Ratios

December 31, 2020 (unaudited)

Contribution Rates and Funded Ratios[1/]

($ thousands)

		For FY Beginning July 1 Following Valuation Year[2/]					
Valuation Year Ended Dec 31	Funding Payroll	Member Contribution Rate[3/]	Employer Normal Cost Rate	Unfunded Liability Rate[4/]	Preliminary Employer Contribution Rate[5/]	Final Employer Contribution Rate	Funded Ratio
2011[6/]	$5,890,704	6.25%	5.10%	21.29%	26.39%	11.50%	65.3%
2012	5,836,402	6.25	5.01	26.21	31.22	16.00	58.8
2013	5,897,627	6.25	5.00	26.41	31.41	20.50	59.2
2014	6,021,688	6.25	4.95	26.56	31.51	25.00	59.4
2015	6,255,189	6.25	4.52	27.62	32.14	29.50	58.0
2016	6,187,427	6.25	4.91	28.31	33.22	33.22	58.1
2017[7/]	6,265,071	6.25	4.88	28.02	32.90	32.90	59.4
2018	6,469,401	6.25	1.25	32.28	33.53	33.53	56.0
2019[8/]	6,657,541	6.25	1.67	31.78	33.45	33.45	56.5
2020[9/]	6,700,320	6.25	1.50	32.26	33.76	33.76	59.4
2021[10/,11/]	6,887,929	6.25	8.29	26.22	34.51	34.51	65.7
2022	7,080,791	6.25	8.12	25.10	33.22	33.22	67.6
2023	7,279,053	6.25	7.96	23.24	31.20	31.20	70.8
2024	7,482,867	6.25	7.81	22.13	29.94	29.94	72.9
2025	7,692,387	6.25	7.66	21.44	29.10	29.10	74.3
2026	7,907,774	6.25	7.53	20.79	28.32	28.32	75.7
2027	8,129,191	6.25	7.40	20.19	27.59	27.59	77.0
2028	8,356,809	6.25	7.27	19.63	26.90	26.90	78.3
2029	8,590,799	6.25	7.15	19.09	26.24	26.24	79.7
2030	8,831,342	6.25	7.04	18.56	25.60	25.60	81.1

[1/]Except as noted, the projection of contribution rates is based on the assumption that there are no changes in SERS statutory funding methodology, no changes in demographics or economic assumptions, no changes in benefit provisions, and no actuarial gains or losses on the actuarial value of assets that result from recognizing currently deferred gains or losses on the fair value of assets. All information on this page is based on statutory funding requirements.

[2/]Rates and values are for the fiscal year beginning July 1 following the valuation year and do not include Benefits Completion Plan contributions.

[3/]For Class AA and A-3 employees, as they comprise most of SERS membership.

[4/]Act 2003-40 imposed a split amortization that recognized Cost of Living Adjustments and certain large gains over 10 years, while recognizing other gains and losses over 30 years. The effect was to suppress the unfunded liability rate for 10 years ending in 2011.

[5/]Actuarial rate before floor and collar.

[6/] Act 2010-120 amended the Retirement Code to place a collar on increases to employer contribution rates starting July 1, 2011. A collar of 3.50% was in place for fiscal year beginning July 1, 2012. A 4.50% collar was in place for fiscal year beginning July 1, 2013 and continued onward until the collar was deemed unnecessary.

[7/]Act 2010-120 amended the Retirement Code to place a permanent floor at employer normal cost after collars expire.

[8/]Act 2017-5 amended the Retirement Code to add two hybrid Defined Benefits (DB)/Defined Contributions (DC) plans and a DC-only plan effective January 1, 2019.

[9/]The Penn State one-time lump sum payment immediately reduced the total SERS unfunded liability by $1.061 billion and increased the December 31, 2020, funded ratio by 1.9%.

[10/]Act 2017-5 amended the Retirement Code to change the funding method to Traditional Entry Age.

[11/]Numbers are projected from 2021 – 2030 based on 2020 actuarial funding valuation.

Summary of Plan Provisions

December 31, 2020 (unaudited)

Benefit and Contribution Provisions

SERS makes provisions for retirement, disability, and death benefits for all state employees, except for those specifically excluded under section 5301 of the State Employees' Retirement Code, and certain other eligible groups. The major provisions may be summarized as follows:

Eligible Employees

Class A

All regular state employees, employees of certain commissions and authorities, employees of state- owned educational institutions, and the Pennsylvania State University (unless such employees have joined the Public School Employees' Retirement System (PSERS), TIAA, or Alternative Retirement Program (ARP)) hired before July 1, 2001, who did not elect into the class AA membership as of December 31, 2001. This excludes judges and Magisterial District Judges who have elected class E-1 or class E-2.

Class AA

All regular state employees who are hired after June 30, 2001, and before January 1, 2011, and former class A state employees hired before July 1, 2001, who elected into class AA as of December 31, 2001. This includes employees of certain commissions and authorities, employees of state-owned educational institutions, and the Pennsylvania State University (unless such employees have joined PSERS, TIAA, or ARP), but excludes state police troopers, judges, Magisterial District Judges, and legislators with class D-4.

Class A-3

All regular state employees who enter SERS membership for the first time on or after January 1, 2011 and before January 1, 2019, and all legislators who became members on or after December 1, 2010; Capitol police and park rangers who became members starting July 1, 2011; and state police officers who became members starting July 1, 2012, provided the member did not elect membership in the optional A-4 class within 45 days of becoming a member.

Starting January 1, 2019, class A-3 is only offered to state employees in exempt positions.

Class A-4

All members who would be class A-3 but elected A-4 within 45 days of becoming a member.

Class A-5

All regular state employees who enter SERS membership for the first time on or after January 1, 2019, and SERS members hired before January 1, 2019, who were given a one-time, irrevocable option to elect class A-5 as of April 1, 2019, starting July 1, 2019, while retaining prior class up to July 1, 2019, including members of the General Assembly, judges, and Magisterial District Judges.

Class A-6

All members who would be class A-5 but elected A-6 within 45 days of becoming a member, and SERS members hired before January 1, 2019, who were given a one-time, irrevocable option to elect class A-6 as of April 1, 2019, starting July 1, 2019, while retaining prior class up to July 1, 2019.

Defined Contribution-Only Plan

All members who would be class A-5 but elected the defined contribution-only plan within 45 days of becoming a member, and SERS members hired before January 1, 2019, who were given a one-time, irrevocable option to elect defined contribution- only plan as of April 1, 2019, starting July 1, 2019, while retaining prior class up to July 1, 2019. Those members choosing the defined contribution-only plan are not eligible for a benefit from the Defined Benefit Plan; but retire with their contributions, employer contributions if vested with three eligibility points, and any investment earnings on those contributions less investment expenses and fees, however SERS members hired before January 1, 2019, who elected defined contribution-only plan as of April 1, 2019, starting July 1, 2019, still retained their eligibility for a benefit from the Defined Benefit Plan for service up to July 1, 2019.

Summary of Plan Provisions

December 31, 2020 (unaudited)

Class D-4
Legislators coming into service after June 30, 2001, and before December 1, 2010, who elect to be SERS members and legislators who elected class D-4 before July 1, 2001.

Class E-1
Judges who elect class E-1.

Class E-2
Magisterial District Judges who elect class E-2.

Age and Service Requirements for Superannuation (Normal Retirement) in Defined Benefit Plan
(Full Formula Benefit)

Class AA/A
Age 60 with three years of service; except for members of the General Assembly, enforcement officers, correction officers, psychiatric security aides, and officers of the Delaware River Port Authority for whom the requirement is age 50 with three years of service. Members of class AA/A with 35 years of credited service are entitled to full formula benefits regardless of age. State police officers can retire on full benefits after age 50 or with 20 years of service. Capitol police and park rangers can retire on full benefits at age 50 with 20 years of Capitol police or park ranger service.

Class A-3/A-4
Age 65 for most members with three years of service, and age 55, with three years of service, for members of the General Assembly, enforcement officers, correction officers, psychiatric security aides, Delaware River Port Authority police officers, and officers of the Pennsylvania State Police. Capitol police officers and park rangers can retire on full benefits at age 55 with 20 or more years of credited service in the classification. Members of class A-3/A-4 are eligible for full formula benefits with 35 years of credited service with a superannuation score of 92.

Class A-5/A-6
Age 67, with three years of service; or eligible for full formula benefits with 35 years of credited service with a superannuation score of 97.

Class D-4
Age 50, with three years of service.

Class E-1
Age 60, with three years of service; or 35 or more years of credited service, regardless of age.

Class E-2
Age 60, with three years of service; or 35 or more years of credited service, regardless of age.

Formula for Superannuation (Normal) Annuity in Defined Benefit Plan
The maximum single-life annuity for most members is 2% of the highest three-year average salary of the member multiplied by years and fractions of credited service multiplied by the multiplier of the class of membership. For A-5 and A-6 members the maximum single-life annuity is 2% of an average of the highest five calendar years of the member multiplied by years and fractions of credited service multiplied by the multiplier of the class of membership.

The annuity paid to a member shall not exceed the member's highest salary during any period of 12 consecutive months of creditable service.

The Defined Benefit Plan multiplier for each of the major classes are as follows:

Defined Benefit Plan Multiplier for Major Classes

Class	Multiplier	
A[1/]	1.00	
AA	1.25	
A-3[1/]	1.00	
A-4[1/]	1.25	
A-5	0.625	
A-6	0.50	
D-4	1.50	
E-1	2.00	For each of the first 10 years of judicial service dropping to 1.5 for each subsequent year of judicial service.
E-2	1.50	For each year of judicial service.

[1/] For state police with 20 – 24.99 years of service, the benefit is 50% of the highest annual salary; with 25 or more years of service, the benefit is 75% of the highest annual salary.

NOTE: There are conditions under which long-service members or members retiring at advanced ages may receive somewhat larger benefits than those described above. Further, benefit limitations exist for most members of SERS.

Statistical Section

pennsylvania
STATE EMPLOYEES' RETIREMENT SYSTEM

Statistical Section Narrative

December 31, 2020 (unaudited)

The Statistical Section of SERS' Annual Comprehensive Financial Report presents detailed information related to the financial statements, as well as highlights of actuarial valuations. The Statistical Section presents information on the Defined Benefit Plan, unless noted otherwise. The schedules in this section are classified into the following four categories: financial trends, revenue capacity, demographic and economic information, and operating information.

Financial Trends

The **Schedule of Trend Data** provides key financial, actuarial, and demographic data for 10 years ended December 31, 2020. This data includes items such as employer and member contribution rates; contributions received and benefits paid by SERS; values of assets and liabilities; and the number of annuitants, beneficiaries, and active members.

The **Schedule of Additions to Fiduciary Net Position** presents the member and employer contributions, as well as the net investment income/ loss for the 10 years ended December 31, 2020. SERS investment returns have the most significant impact on fiduciary net position.

The **Schedule of Deductions from Fiduciary Net Position** presents the benefits, refunds of contributions, and administrative expenses for the 10 years ended December 31, 2020 Of these three categories, SERS benefit payments have the most significant impact on the total deductions from fiduciary net position.

The **Schedule of Benefit and Refund Deductions from Fiduciary Net Position by Type** presents the amount of benefit payments and refunds by type for the 10 years ended December 31, 2020. Most benefit types are either normal or early, which is determined by the number of years of service and/or age at retirement.

The **Schedule of Total Changes in Fiduciary Net Position** combines the additions to and deductions from fiduciary net position from the Schedule of Additions to Fiduciary Net Position and Schedule of Deductions from Fiduciary Net Position to arrive at net increase/decrease of changes in the Defined Benefit Plan's fiduciary net position for the 10 years ended December 31, 2020. Information for the Defined Contribution Plan, which opened for enrollment on January 1, 2019, is also being provided for the years the plan has been in existence.

Revenue Capacity

The **Schedule of Investment Income** presents the details of the total net investment income/ loss for the 10 years ended December 31, 2020. SERS has two external sources of revenue and one own-source (internal) of revenue. Employer contributions and member contributions, which information is provided for in the Schedule of Additions to Fiduciary Net Position, are the two external sources of revenue, and investment income is SERS own-source revenue. Since investment income/loss has the greatest impact to SERS, this schedule provides more detail on the major components of the investment income/loss, which is also disclosed in total on the Schedule of Additions to Fiduciary Net Position.

Demographic and Economic Information

The **Schedule of Active Member Statistics** provides the total number of active members, as well as the average age, average service, and average salary by gender for the 10 years ended December 31, 2020.

Operating Information

The **Schedule of Retired Members by Type of Benefit** presents, for given benefit ranges, the total number of retirees, total monthly benefits, and total number of retirees by retirement type as of December 31, 2020.

Statistical Section Narrative

December 31, 2020 (unaudited)

The **Schedule of Retired Members by Option** presents, for given benefit ranges, the total number of retirees, total monthly benefits, and total number of retirees by retirement option as of December 31, 2020.

The **Schedule of Average Monthly Benefit Payments** presents, in five-year increments of credited service, the average monthly benefit, average final average salary, and number of retired members for the 10 years ended December 31, 2020.

The **Schedule of Average Annual Benefit Payments** presents, in five-year age increments and by gender, the average annual benefit for each major retirement type as of December 31, 2020.

The **Schedule of Employer/Agency Participation** provides the number of covered members and the corresponding percentage of participation for the five largest employers/agencies for the 10 years ended December 31, 2020, as well as a listing of additional employers/agencies participating with SERS as of December 31, 2020.

Sources: Unless otherwise noted, the information for these schedules is derived from the Financial Section and Actuarial Section of the Annual Comprehensive Financial Report for the relevant year.

Schedule of Trend Data
December 31, 2020 (unaudited)

Trend Data[1/]

	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Year-End Contribution Rates										
Employer[2/,3/,4/]	33.48%	33.59%	32.93%	33.24%	29.51%[7/]	25.01%[7/]	20.53%[7/]	16.05%[7/]	11.59%[7/]	8.01%[7/]
Member	4.96%	4.95%[8/]	6.25%	6.25%	6.25%	6.25%	6.25%	6.25%	6.25%	6.25%
Contributions										
Employer[2/]	$3,186,445	$2,114,882	$2,048,594	$1,897,404	$1,622,123	$1,360,431	$1,084,104	$794,911	$565,621	$391,749
Member	$409,637	$404,769	$393,925	$383,359	$374,570	$371,624	$365,923	$351,968	$347,937	$350,852
Average Annual Compensation	$63,802	$61,532	$59,984	$58,113	$56,499	$56,858	$54,769	$53,224	$52,230	$52,159
Fiduciary Net Position (FNP)	$35,027,730	$31,096,319	$26,936,990	$29,405,042[9/]	$26,387,889	$26,054,890	$27,337,778	$27,394,156	$25,389,335	$24,377,179
Total Pension Liability (TPL)[5/]	$52,253,754	$49,274,314	$47,768,011	$46,696,751	$45,648,214	$44,238,721	$42,195,186	$41,057,541	NA	NA
FNP as % of TPL[5/]	67.0%	63.1%	56.4%	63.0%	57.8%	58.9%	64.8%	66.7%	NA	NA
Net Pension Liability[5/]	$17,226,024	$18,177,995	$20,831,021	$17,291,709	$19,260,325	$18,183,831	$14,857,408	$13,663,385	NA	NA
Actuarial Value of Assets[4/]	$32,703,275	$29,934,024	$28,989,607	$28,776,939	$27,596,048	$26,877,127	$26,584,948	$25,975,185	$25,302,688	$27,618,461
Actuarial Accrued Liability[4/]	$55,098,758	$52,972,575	$51,782,205	$48,439,403	$47,518,964	$46,328,929	$44,750,670	$43,874,580	$43,055,564	$42,281,862
Funded Ratio[4/]	59.4%	56.5%	56.0%	59.4%	58.1%	58.0%	59.4%	59.2%	58.8%	65.3%
Total Benefits and Refunds	$3,556,728	$3,512,671	$3,394,636	$3,303,543	$3,227,548	$3,080,861	$2,946,465	$2,844,285	$2,674,133	$2,705,263
Average Pension[6/]	$30,050	$29,440	$28,880	$28,352	$27,722	$27,042	$26,426	$25,839	$25,083	$24,448
Annuitants and Beneficiaries	133,334	132,731	131,007	129,473	127,338	124,689	122,249	120,052	117,061	115,342
Active Members	100,962	102,850	103,007	102,978	104,632	105,025	104,431	105,186	106,048	107,021

[1/]All dollar amounts are in thousands, except Average Annual Compensation and Average Pension.
[2/]Includes Benefits Completion Plan contribution.
[3/]Employer rate represents total contributions as a percent of covered payroll at December 31.
[4/]Based on actuarial valuation for funding purposes as required by statute.
[5/]Based on actuarial valuation for financial purposes as required by Governmental Accounting Standards Board Statement No. 67 (GASB 67). Information for 10 years will be displayed in the future to coincide with financial reporting requirements under GASB 67.
[6/]Represents average annual pension only for members who have reached superannuation through age or service credits.
[7/]Act 2010-120 set collars on the increase of the employer contribution rate at 3% effective July 1, 2011, 3.5% for July 1, 2012, and 4.5% every year thereafter until no longer needed.
[8/]Act 2017-5 established a two new side-by-side hybrid defined benefit/defined contribution benefit option and a new DC-only option to all state employees, excluding most hazardous duty employees. This reduced the member contribution rate.
[9/]In 2017, fiduciary net position excluded OPEB adjustment by Governmental Accounting Standard Board Statement No 75 (GASB 75).

Source: Pennsylvania State Employees' Retirement System

Schedule of Additions to Fiduciary Net Position

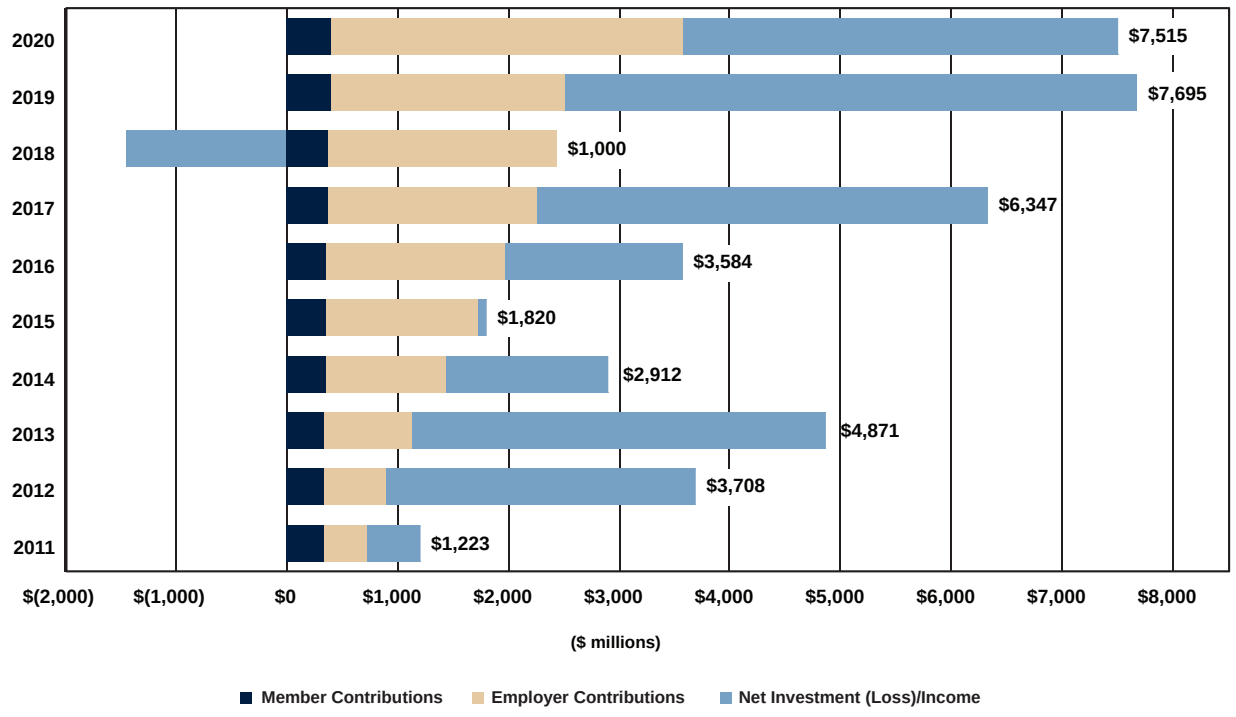
December 31, 2020 (unaudited)

Additions to Fiduciary Net Position

($ thousands)

Year Ended	Member Contributions	Employer Contributions		Net Investment Income/(Loss)	Total
		Dollar Amount	% of Covered-Employee Payroll[1/]		
2020	$409,637	$3,186,445	49.5%	$3,919,279	$7,515,361
2019	404,769	2,114,882	33.4	5,175,624	7,695,275
2018	393,925	2,048,594	33.2	(1,442,291)	1,000,228
2017	383,359	1,897,404	31.7	4,066,055	6,346,818
2016	374,570	1,622,123	27.4	1,586,853	3,583,546
2015	371,624	1,360,431	22.8	87,990	1,820,045
2014	365,923	1,084,104	19.0	1,462,051	2,912,078
2013	351,968	794,911	14.2	3,724,038	4,870,917
2012	347,937	565,621	10.2	2,794,940	3,708,498
2011	350,852	391,749	7.0	480,445	1,223,046

[1/]Calculated by dividing employer contributions by total annualized compensation (covered-employee payroll) provided by actuary.



Source: Pennsylvania State Employees' Retirement System

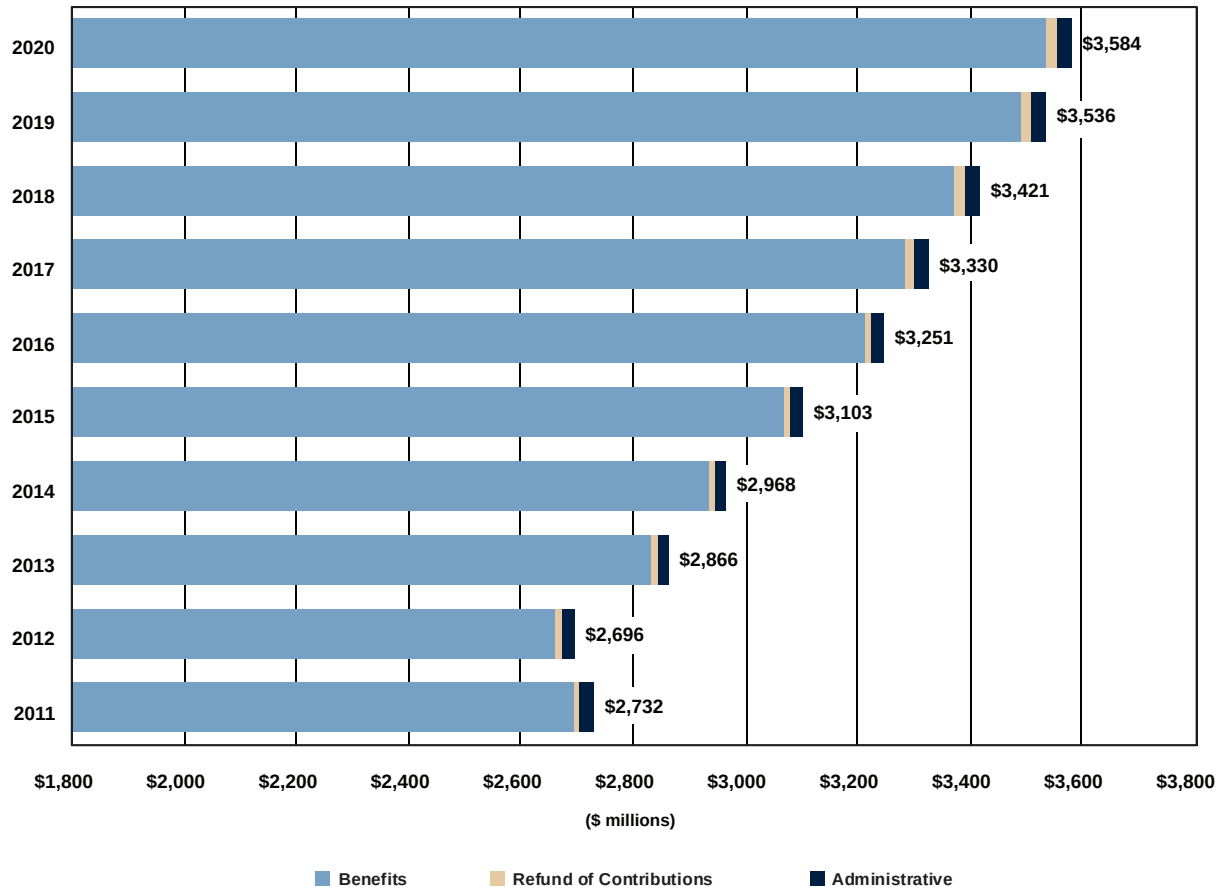
Schedule of Deductions from Fiduciary Net Position

December 31, 2020 (unaudited)

Deductions from Fiduciary Net Position

($ thousands)

Year Ended	Benefits	Refund of Contributions	Administrative Expenses	Total
2020	$3,538,634	$18,094	$27,222	$3,583,950
2019	3,490,311	22,360	23,275	3,535,946
2018	3,375,394	19,242	25,950	3,420,586
2017	3,287,923	15,620	26,122	3,329,665
2016	3,214,440	13,108	22,999	3,250,547
2015	3,069,328	11,533	22,072	3,102,933
2014	2,936,591	9,874	21,991	2,968,456
2013	2,833,676	10,609	21,811	2,866,096
2012	2,664,242	9,891	22,209	2,696,342
2011	2,695,732	9,531	26,706	2,731,969



Source: Pennsylvania State Employees' Retirement System

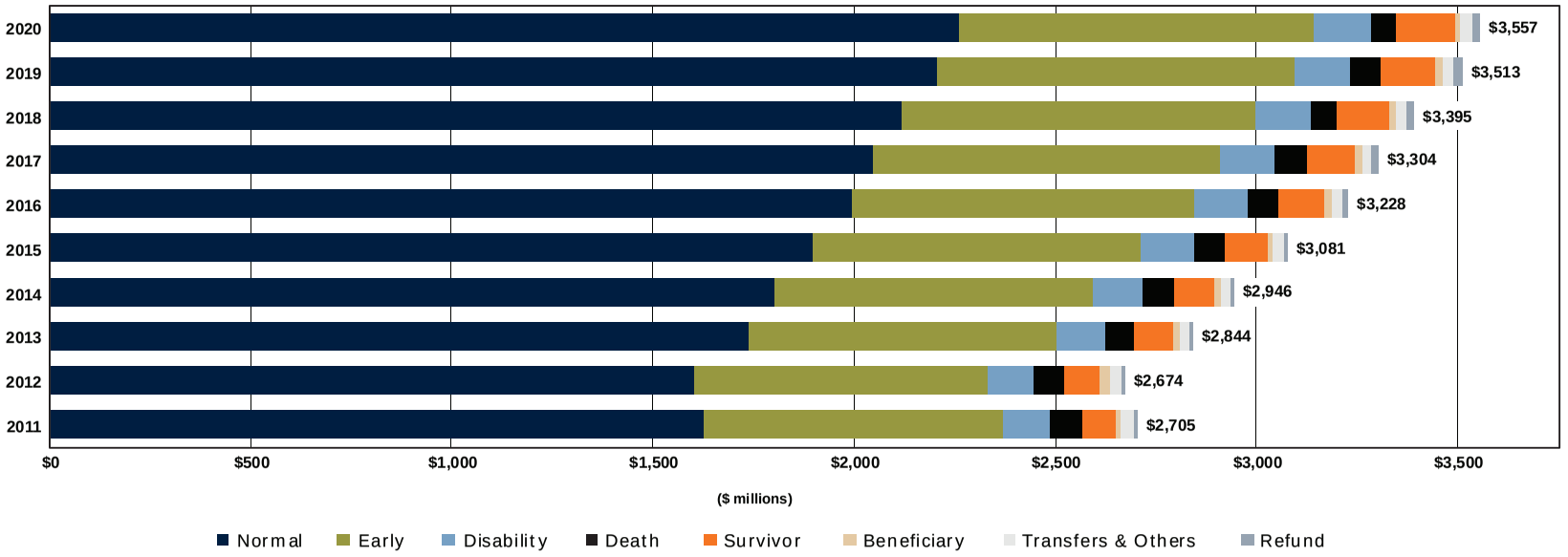
Schedule of Benefit and Refund Deductions from Fiduciary Net Position by Type

December 31, 2020 (unaudited)

Benefit and Refund Deductions from Fiduciary Net Position by Type

($ thousands)

Year Ended	Retirement						Transfers & Other	Total Benefit Deductions	Refunds		Total Refunds
	Normal	Early	Disability	Death	Survivor	Beneficiary			Separation of Service	Death	
2020	$2,264,119	$881,623	$140,813	$61,629	$145,877	$15,860	$28,713	$3,538,634	$17,535	$559	$18,094
2019	2,207,145	888,899	139,607	74,257	137,479	16,855	26,069	3,490,311	21,932	428	22,360
2018	2,122,512	877,579	137,616	66,408	129,533	15,581	26,165	3,375,394	19,009	233	19,242
2017	2,051,059	859,554	135,707	80,322	121,511	16,510	23,260	3,287,923	15,372	248	15,620
2016	1,997,704	851,302	132,833	76,455	114,465	15,976	25,705	3,214,440	12,861	247	13,108
2015	1,900,468	816,595	129,810	75,845	106,748	16,066	23,796	3,069,328	11,302	231	11,533
2014	1,803,669	789,723	126,457	78,580	100,527	15,510	22,125	2,936,591	9,723	151	9,874
2013	1,737,107	769,385	121,640	71,216	93,919	17,271	23,138	2,833,676	10,318	291	10,609
2012	1,604,985	728,719	116,914	75,254	88,055	26,497	23,818	2,664,242	9,673	218	9,891
2011	1,626,233	749,180	112,575	82,123	82,467	15,093	28,061	2,695,732	9,271	260	9,531



Source: Pennsylvania State Employees' Retirement System

Defined Benefit Plan Total Changes in Fiduciary Net Position

($ thousands)

	Additions to Fiduciary Net Position				Deductions from Fiduciary Net Position				
Year Ended	Member Contributions	Employer Contributions	Net Investment Income/ (Loss)	Total Additions	Benefits	Refund of Contributions	Administrative Expenses	Total Deductions	Net Increase/ (Decrease)
2020	$409,637	$3,186,445	$3,919,279	$7,515,361	$3,538,634	$18,094	$27,222	$3,583,950	$3,931,411
2019	404,769	2,114,882	5,175,624	7,695,275	3,490,311	22,360	23,275	3,535,946	4,159,329
2018	393,925	2,048,594	(1,442,291)	1,000,228	3,375,394	19,242	25,950	3,420,586	(2,420,358)
2017	383,359	1,897,404	4,066,055	6,346,818	3,287,923	15,620	26,122	3,329,665	3,017,153
2016	374,570	1,622,123	1,586,853	3,583,546	3,214,440	13,108	22,999	3,250,547	332,999
2015	371,624	1,360,431	87,990	1,820,045	3,069,328	11,533	22,072	3,102,933	(1,282,888)
2014	365,923	1,084,104	1,462,051	2,912,078	2,936,591	9,874	21,991	2,968,456	(56,378)
2013	351,968	794,911	3,724,038	4,870,917	2,833,676	10,609	21,811	2,866,096	2,004,821
2012	347,937	565,621	2,794,940	3,708,498	2,664,242	9,891	22,209	2,696,342	1,012,156
2011	350,852	391,749	480,445	1,223,046	2,695,732	9,531	26,706	2,731,969	(1,508,923)

Defined Contribution Total Changes in Fiduciary Net Position

($ thousands)

	Additions to Fiduciary Net Position					Deductions from Fiduciary Net Position				
Year Ended	Member Contributions	Employer Contributions	Annual Employer Charge/ Commonwealth Funding	Net Investment Income	Total Additions	Benefits	Refund of Contributions	Administrative Expenses	Total Deductions	Net Increase
2020	$14,799	$7,733	$4,556	$4,971	$32,059	$201	$103	$3,660	$3,964	$28,095
2019	6,124	2,836	3,852	673	13,485	52	20	5,185	5,257	8,228

Source: Pennsylvania State Employees' Retirement System

Investment Income

($ thousands)

	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Investment income/(loss)										
From investing activities										
Net appreciation/(depreciation) in fair value of investments[1/]	$3,659,500	$4,901,079	($1,733,999)	$3,710,739	$1,233,501	($216,817)	$1,155,301	$3,476,349	$2,268,730	$614,117
Commingled funds appreciation/(depreciation) and income[1/]	NA	NA	NA	NA	NA	NA	NA	NA	275,103	(267,177)
Interest	199,398	162,152	142,918	126,728	126,219	130,616	142,434	120,815	144,431	165,082
Dividends	162,817	182,853	203,533	260,013	273,733	223,927	246,528	204,214	190,733	78,823
Real estate income	48,510	101,283	74,115	95,533	89,327	108,844	93,167	99,314	97,641	82,707
Miscellaneous income	2,059	5,269	889	3,713	27,381	3,426	1,799	668	4,583	2,316
Total investing activities income/ (loss)	4,072,284	5,352,636	(1,312,544)	4,196,726	1,750,161	249,996	1,639,229	3,901,360	2,981,221	675,868
Investment expenses	(155,361)	(179,344)	(133,146)	(135,079)	(167,712)	(166,610)	(186,527)	(181,042)	(189,722)	(197,505)
Net income/(loss) from investing activities	3,916,923	5,173,292	(1,445,690)	4,061,647	1,582,449	83,386	1,452,702	3,720,318	2,791,499	478,363
From securities lending activities										
Securities lending income	2,617	2,587	3,771	4,883	4,893	5,105	9,917	4,326	3,953	2,376
Securities lending expenses	(261)	(255)	(372)	(475)	(489)	(501)	(568)	(606)	(512)	(294)
Net income from securities lending activities	2,356	2,332	3,399	4,408	4,404	4,604	9,349	3,720	3,441	2,082
Net investment income/(loss)	**$3,919,279**	**$5,175,624**	**($1,442,291)**	**$4,066,055**	**$1,586,853**	**$87,990**	**$1,462,051**	**$3,724,038**	**$2,794,940**	**$480,445**

[1]/In 2014, SERS began to report commingled funds as part of net appreciation/(depreciation) in fair value of investments. Certain 2013 figures were restated to conform to 2014 reporting.

Source: Pennsylvania State Employees' Retirement System

Schedule of Investment Income
December 31, 2020 (unaudited)

Schedule of Active Member Statistics

December 31, 2020 (unaudited)

Active Member Statistics

	Male			Female			
Year Ended	Average Age	Average Service	Average Salary	Average Age	Average Service	Average Salary	Total Number of Active Members
2020	46.11	11.57	$68,125	46.93	10.90	$58,182	100,962
2019	46.00	11.51	66,220	46.61	10.71	55,439	102,850
2018	46.06	11.65	64,716	46.62	10.83	53,794	103,007
2017	46.23	11.79	62,739	46.61	10.97	52,049	102,978
2016	46.15	11.73	60,965	46.51	10.95	50,629	104,632
2015	46.33	11.94	61,639	46.57	11.11	50,525	105,205
2014	46.55	12.12	59,228	46.77	11.44	48,825	104,431
2013	46.63	12.19	57,416	46.92	11.64	47,583	105,186
2012	46.64	12.23	56,118	46.90	11.79	46,981	106,048
2011	46.55	12.17	56,008	46.70	11.70	46,992	107,021

Source: Pennsylvania State Employees' Retirement System

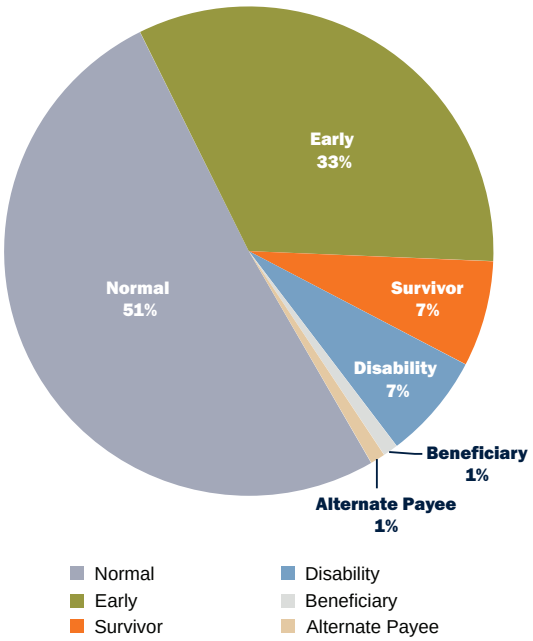
Schedule of Retired Members by Type of Benefit

December 31, 2020 (unaudited)

Retired Members by Type of Benefit

Amount of Monthly Benefits	Total Monthly Benefits[1/]	Total Number of Retirees	Type of Benefit					
			Normal	Disability	Early	Beneficiary	Survivor	Alternate Payee
≤ $500	$6,332,742	26,404	5,509	422	16,729	435	2,751	558
> 500 to 1,000	15,378,323	20,603	9,260	3,206	4,793	312	2,518	514
> 1,000 to 1,500	21,835,019	17,618	9,245	2,201	3,985	139	1,705	343
> 1,500 to 2,000	25,569,842	14,658	7,938	1,197	4,312	91	977	143
> 2,000 to 2,500	28,473,721	12,703	7,363	671	3,871	53	695	50
> 2,500 to 3,000	28,075,323	10,239	6,447	388	2,962	28	390	24
> 3,000 to 3,500	28,234,344	8,710	5,817	217	2,366	21	279	10
> 3,500 to 4,000	23,447,437	6,280	4,507	110	1,500	13	146	4
> 4,000 to 4,500	19,626,919	4,639	3,512	59	950	16	101	1
> 4,500 to 5,000	14,847,305	3,137	2,432	28	597	8	68	4
> 5,000 to 5,500	12,509,242	2,387	1,688	13	610	6	69	1
> 5,500 to 6,000	10,281,372	1,792	1,230	8	520	3	31	—
> 6,000	31,268,986	4,164	3,157	4	937	3	62	1
Totals	**$265,880,577**	**133,334**	**68,105**	**8,524**	**44,132**	**1,128**	**9,792**	**1,653**

[1/]Does not include supplemental payments and transfers.



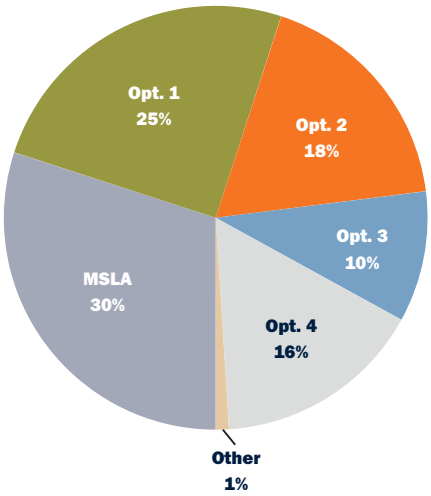
Source: Pennsylvania State Employees' Retirement System

Schedule of Retired Members by Option

December 31, 2020 (unaudited)

Retired Members by Option

Amount of Monthly Benefits	Total Monthly Benefits	Total Number of Retirees	Option Selected					
			MSLA	Opt. 1	Opt. 2	Opt. 3	Opt. 4	Other
≤ $500	$6,332,742	26,404	6,101	10,676	5,549	1,418	2,199	461
> 500 to 1,000	15,378,323	20,603	7,109	4,689	4,146	2,037	2,284	338
> 1,000 to 1,500	21,835,019	17,618	5,534	3,899	3,587	1,870	2,576	152
> 1,500 to 2,000	25,569,842	14,658	4,591	3,238	2,589	1,727	2,411	102
> 2,000 to 2,500	28,473,721	12,703	3,790	2,685	2,173	1,544	2,455	56
> 2,500 to 3,000	28,075,323	10,239	3,196	2,086	1,572	1,281	2,071	33
> 3,000 to 3,500	28,234,344	8,710	2,632	1,844	1,263	1,113	1,836	22
> 3,500 to 4,000	23,447,437	6,280	2,155	1,199	791	872	1,249	14
> 4,000 to 4,500	19,626,919	4,639	1,566	820	592	604	1,040	17
> 4,500 to 5,000	14,847,305	3,137	1,016	518	390	429	776	8
> 5,000 to 5,500	12,509,242	2,387	773	363	276	285	684	6
> 5,500 to 6,000	10,281,372	1,792	586	276	194	238	495	3
> 6,000	31,268,986	4,164	1,480	551	448	594	1,088	3
Totals	**$265,880,577**	**$133,334**	**40,529**	**32,844**	**23,570**	**14,012**	**21,164**	**1,215**



- MSLA - Maximum Single-Life Annuity
- Opt. 1 - Beneficiary receiving remainder of present value when member dies
- Opt. 2 - Survivor receiving 100% of the member's annuity when member dies
- Opt. 3 - Survivor receiving 50% of the member's annuity when member dies
- Opt. 4 - Member designs a different plan approved by SERS not covered under the above options
- Other - Death benefit or domestic relations order

Source: Pennsylvania State Employees' Retirement System

Schedule of Average Monthly Benefit Payments

December 31, 2020 (unaudited)

Average Monthly Benefit Payments[1/]

Retirement Effective Dates	Years of Credited Service						
	< 5	5-9	10-14	15-19	20-24	25-29	30+
Period 1/1/2020 to 12/31/2020							
Average monthly benefit	$253	$615	$1,099	$1,669	$2,535	$4,029	$4,728
Average final average salary	$41,977	$51,381	$55,608	$62,136	$72,097	$86,841	$83,005
Number of retired members	49	412	599	539	886	810	1,084
Period 1/1/2019 to 12/31/2019							
Average monthly benefit	$258	$570	$1,061	$1,606	$2,422	$3,778	$4,654
Average final average salary	$44,084	$48,697	$55,118	$59,822	$68,438	$82,120	$80,137
Number of retired members	76	512	839	574	861	940	1,178
Period 1/1/2018 to 12/31/2018							
Average monthly benefit	$284	$531	$1,018	$1,556	$2,467	$3,937	$4,466
Average final average salary	$39,834	$46,591	$54,260	$58,668	$68,305	$84,510	$78,312
Number of retired members	51	586	808	578	799	1,008	1,093
Period 1/1/2017 to 12/31/2017							
Average monthly benefit	$226	$488	$928	$1,490	$2,352	$3,853	$4,495
Average final average salary	$36,612	$43,755	$51,691	$56,721	$65,980	$83,170	$78,194
Number of retired members	46	681	820	526	788	1,033	1,166
Period 1/1/2016 to 12/31/2016							
Average monthly benefit	$331	$472	$987	$1,574	$2,259	$4,116	$4,349
Average final average salary	$48,086	$45,428	$51,515	$57,976	$63,844	$85,896	$75,240
Number of retired members	53	777	786	528	845	1,209	1,332
Period 1/1/2015 to 12/31/2015							
Average monthly benefit	$308	$433	$896	$1,369	$2,279	$3,396	$4,214
Average final average salary	$43,955	$44,272	$48,934	$53,496	$64,173	$75,168	$72,142
Number of retired members	71	924	744	515	772	1,036	1,454
Period 1/1/2014 to 12/31/2014							
Average monthly benefit	$300	$453	$892	$1,462	$2,177	$3,256	$4,061
Average final average salary	$43,879	$43,513	$48,310	$55,258	$61,462	$72,587	$70,590
Number of retired members	91	963	814	473	912	1,018	1,344
Period 1/1/2013 to 12/31/2013							
Average monthly benefit	$262	$399	$845	$1,466	$2,178	$3,408	$4,036
Average final average salary	$40,035	$42,368	$47,413	$55,071	$61,526	$74,649	$69,812
Number of retired members	68	947	779	496	814	1,049	1,451
Period 1/1/2012 to 12/31/2012							
Average monthly benefit	$261	$406	$823	$1,495	$2,101	$3,464	$4,073
Average final average salary	$38,197	$42,106	$46,477	$54,120	$58,807	$74,455	$70,238
Number of retired members	94	899	724	535	680	908	1,184
Period 1/1/2011 to 12/31/2011							
Average monthly benefit	$263	$445	$843	$1,430	$2,095	$2,994	$3,829
Average final average salary	$36,895	$44,808	$46,588	$52,687	$58,928	$67,793	$66,989
Number of retired members	103	851	716	769	856	1,134	2,276

[1/]Includes normal retirement, early retirement, and disability benefits for new retirees in the years listed.

Source: Pennsylvania State Employees' Retirement System

Schedule of Average Annual Benefit Payments

December 31, 2020 (unaudited)

Average Annual Benefit Payments

	Normal		Early		Disability		Beneficiary and Survivor	
Age	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**
Under 25	NA	NA	NA	NA	NA	NA	$8,594	$6,809
25-29	NA	NA	$587	$1,113	NA	$14,281	9,744	11,480
30-34	NA	NA	1,493	1,130	16,742	11,996	11,347	9,395
35-39	NA	NA	2,149	1,342	17,047	14,351	8,439	9,712
40-44	NA	NA	2,814	2,182	18,895	15,237	11,031	9,174
45-49	NA	NA	13,943	4,053	20,480	16,546	13,375	10,873
50-54	$50,538	$38,236	36,249	8,704	20,622	16,825	7,815	13,778
55-59	47,659	43,395	27,861	15,449	20,187	17,585	9,213	14,180
60-64	39,188	35,021	25,434	17,909	18,848	17,099	10,191	14,206
65-69	32,941	30,358	22,998	17,709	17,507	15,929	14,560	15,998
70-74	31,051	26,758	23,492	16,524	15,599	14,491	12,764	16,662
75-79	31,529	23,309	21,699	14,410	11,923	11,814	12,449	16,559
80-84	29,895	19,627	16,039	10,964	9,724	9,000	10,751	15,350
85-89	25,440	14,747	16,166	9,319	9,469	8,465	10,072	12,886
90 and over	20,908	11,797	14,766	8,449	11,742	7,387	8,242	10,591
Total Average	**$32,872**	**$26,161**	**$22,993**	**$14,224**	**$17,332**	**$15,225**	**$11,463**	**$14,636**

	Normal	Early	Disability	Beneficiary and Survivor
Average Pension	$30,050	$18,727	$16,234	$14,253
Average Age	72.6	66.0	64.9	74.7

Source: Pennsylvania State Employees' Retirement System

Schedule of Employer/Agency Participation

December 31, 2020 (unaudited)

Schedule of Employer/Agency Participation - 5 Largest

- Number of active members

% - Percentage of total active members

Year Ended	Department of Human Services		Department of Corrections		Department of Transportation		Pennsylvania State University		Pennsylvania State Police		Active Members for 5 Largest Employers/ Agencies	
	#	%	#	%	#	%	#	%	#	%	#	%
2020[1/]	16,074	15.92	15,143	15.00	12,023	11.91	6,653	6.59	6,362	6.30	**56,255**	**55.72**
2019[1/]	16,404	15.95	15,359	14.93	12,144	11.81	6,868	6.68	6,432	6.25	**57,207**	**55.62**
2018[1/]	16,396	15.92	15,610	15.15	12,088	11.74	6,772	6.57	6,353	6.17	**57,219**	**55.55**
2017	16,624	16.14	15,435	14.99	12,221	11.87	6,308	6.13	6,255	6.07	**56,843**	**55.20**
2016	17,205	16.44	15,752	15.05	12,312	11.77	6,367	6.09	6,219	5.94	**57,855**	**55.29**
2015	17,085	16.27	15,362	14.63	12,434	11.84	6,111	5.82	6,459	6.15	**57,451**	**54.70**
2014	16,870	16.15	14,916	14.28	12,325	11.80	6,123	5.86	6,323	6.05	**56,557**	**54.16**
2013	16,668	15.85	15,529	14.76	12,656	12.03	6,210	5.90	6,084	5.78	**57,147**	**54.33**
2012	16,764	15.81	15,682	14.79	12,729	12.00	6,368	6.00	6,012	5.67	**57,555**	**54.27**
2011	17,087	15.97	15,764	14.73	12,826	11.98	6,532	6.10	6,033	5.64	**58,242**	**54.42**

Numbers may not add due to rounding.

[1/]The membership includes 38 employers and the commonwealth is classified as its largest employer. The commonwealth is comprised of 65 agencies and when everything is evaluated separately, SERS has a total of 102 participating employers/agencies.

Source: Pennsylvania State Employees' Retirement System

Schedule of Employer/Agency Participation

As of December 31, 2020 (unaudited)

Remaining Employers/Agencies[1/]

Administrative Office of Pennsylvania Courts
Bloomsburg University Community Activities
Bucks County Community College
Bucks County Health Department
California University Student Association, Inc.
Capitol Preservation Committee
Center for Rural Pennsylvania
Central Susquehanna Intermediate Unit
Chester County Health Department
Clarion University Students' Association
Community College of Allegheny County
Community College of Philadelphia
Delaware County Community College
Delaware River Joint Toll Bridge Commission
Delaware River Port Authority
Delaware Valley Regional Planning Commission
Department of Aging
Department of Agriculture
Department of Banking and Securities
Department of Community and Economic Development
Department of Conservation and Natural Resources
Department of Drug and Alcohol Programs
Department of Education
Department of Environmental Protection
Department of General Services
Department of Health
Department of Labor and Industry
Department of Military and Veterans Affairs
Department of Revenue
Department of State
Department of the Auditor General
East Stroudsburg University Student Activity Association, Inc.
Edinboro University Services, Inc.
Environmental Hearing Board
Erie County Department of Health
Executive Offices
Fish and Boat Commission
Game Commission
Harrisburg Area Community College
Historical and Museum Commission
House Democratic Appropriations Committee
House of Representatives
House Republican Appropriations Committee
Independent Fiscal Office
Independent Regulatory Review Commission
Indiana University Student Co-op Association
Insurance Department
Joint Legislative Conservation Committee
Joint State Government Commission
Kutztown University Student Services, Inc.
Legislative Budget and Finance Committee
Legislative Data Processing Center
Legislative Reference Bureau
Lehigh Carbon Community College
Liquor Control Board
Local Government Commission
Luzerne County Community College
Mansfield University Community Services, Inc.
Milk Marketing Board
Millersville University Student Services, Inc.
Montgomery County Community College
Northampton Community College
Office of Attorney General
Office of Liquidations and Rehabilitations
Office of the Governor
Office of the Lieutenant Governor
Patient Safety Authority
Pennsylvania College of Technology
Pennsylvania Convention Center Authority
Pennsylvania Emergency Management Agency
Pennsylvania Gaming Control Board
Pennsylvania Health Care Cost Containment Council
Pennsylvania Higher Education Assistance Agency
Pennsylvania Highlands Community College
Pennsylvania Housing Finance Agency
Pennsylvania Infrastructure Investment Authority
Pennsylvania Municipal Retirement System
Pennsylvania Parole Board
Pennsylvania Port Authority
Pennsylvania State Employees' Retirement System
Pennsylvania State Senate
Pennsylvania Treasury
Pennsylvania Turnpike Commission
Port Authority Transit Corporation
Public School Employees' Retirement System
Public Utility Commission
Reading Area Community College
Shippensburg University Student Services, Inc.
Slippery Rock Student Government Association, Inc.
State Civil Service Commission
State Ethics Commission
State Public School Building Authority
State System of Higher Education
Susquehanna River Basin Commission
Thaddeus Stevens College of Technology
West Chester University Student Services, Inc.
Westmoreland County Community College

[1/]The membership includes 38 employers and the commonwealth is classified as its largest employer. The commonwealth is comprised of 65 agencies and when everything is evaluated separately, SERS has a total of 102 participating employers/agencies.

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